

THE
O R I G I N
O F
LAWS, ARTS, and SCIENCES,
AND THEIR
P R O G R E S S
A M O N G
The most ANCIENT NATIONS.

Translated from the French of the President
DE GOGUET.

IN THREE VOLUMES.

Adorned with Cuts.

EDINBURGH:

Printed by ALEX. DONALDSON and JOHN REID.

For the TRANSLATOR.

Sold by A. DONALDSON.

MDCCLXI.

THE
ORIGIN

OF
LAW, ART, AND SCIENCE,

AND THEIR

PROGRESS



AND THE HISTORY OF THE

ARTS AND MANUFACTURES

IN THE

AND THE

EDITION

Printed by Adam Davidson and John R. Smith

for the Trustees

of the British Museum

LONDON

18 Pa

THE
O R I G I N
O F
LAWS, ARTS, and SCIENCES,
AND THEIR
P R O G R E S S
AMONG
The most ANCIENT NATIONS.

V O L U M E I.

From the DELUGE to the Death of JACOB.

E D I N B U R G H:

Printed by ALEX. DONALDSON and JOHN REID.

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THE
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P R E F A C E.

THE design of a preface, is to inform the reader of the principal drift and general plan of the work presented to him. I shall do both these in as few words as possible.

The history of laws, arts, and sciences, is, properly speaking, the history of the human mind. This great and most important subject has often indeed been treated of already; but, in my opinion, sufficient pains have not as yet been taken to discover the real origin, and unfold the gradual improvements of all the various branches of our knowledge. In general, the writers who have engaged in this vast and arduous undertaking, have fallen into great mistakes, by indulging themselves too much in conjectures, by following fancies more than facts, and taking their own imaginations, rather than the lights of history, for their guides.

I have resolved therefore to draw a more faithful representation of the first steps of the human understanding. In order to this, I propose to trace the origin of laws, arts, and sciences, with more care and diligence, and in a manner more agreeable to history, than has hitherto been done. I shall endeavour also to shew the strict connection of all these different objects, and their mutual influence upon one another. For, in all nations, the state of the arts and sciences has at all times been intimately connected with, and greatly influenced by the political constitution and form of government. These several objects are, at least, as much connected with manners and customs. The arts especially, bear so strong an impression of the character of the people by whom they have been cultivated, that an attentive examination of their origin and progress is the most effectual way to discover the genius, the manners, and turn of mind, of the various nations of the world. I have followed then, as far as I could perceive them, the footsteps of the human understanding, and represented them fairly

ly

ly as they appeared to me from history. I have insisted particularly on certain discoveries, which being in common and familiar use with us, do not engage our attention so much as they deserve. Nothing, however, will be of greater service to shew us the condition to which a great part of mankind was reduced for many ages. This is the principal drift of my undertaking.

To give a short account of the general plan and disposition of this work : It is well known, that there are but few historical remains of the first ages now extant. I have been obliged, therefore, to join several of these ages together, and consider them in one general point of view, in order to settle and fix the origin of laws, arts, and sciences among the nations of antiquity. For this reason, I have thought proper to divide the whole space of time I have undertaken to examine, into three principal æras. Each of these comprehend a certain number of ages, more or less fertile, in proportion to the facts left us upon record by ancient writers. We shall always, however, be able to perceive pretty distinctly the real state of the several nations I shall have occasion to consider.

For though time and barbarity have robbed us of many ancient writings, yet this loss has only deprived us of the knowledge of some historical facts, of some particular events and details. There still remain a sufficient number of ancient monuments of all kinds, to shew in general, what has been the state of the arts and sciences in every age, from the formation of the first societies, after the confusion of tongues and dispersion of families. We may even discover to what degrees of perfection knowledge had arrived in ancient times.

For example, the manner in which Julius Cæsar regulated the calendar, shews the precise point to which astronomy, or the knowledge of the celestial motions, had attained at that period. This knowledge has never been lost from that time to our days, though, in this interval, an inundation of barbarians overflowed Europe and Asia, for several ages successively. With respect to the other arts and sciences, (without mentioning several other authors which give us some light into the progress of the human understanding), Homer, Hesiod, Herodotus,

dotus, Diodorus, Vitruvius, Strabo, Seneca, Pliny, and Plutarch, inform us of every thing that was known in their times, or before them, in arts, sciences, and politics. If from the bright days of Athens and Rome, to the restoration of learning in Europe, no additions had been made to human knowledge, neither was any thing lost that had been before discovered. The minds of men might be somewhat clouded, and their taste depraved; but the fundamental principles, the elements of the arts and sciences, were never annihilated, or needed to be again invented. No useful or important discovery, nothing, in a word, that was worth preserving, was entirely lost. Every thing that was interesting to the good and happiness of society, has been let down to us by the chain of uninterrupted tradition*. It is not even extremely difficult to trace the stream of knowledge to its source, and discover the date and origin of the greatest part of the arts and sciences. We may at least follow this track a considerable way, and form a pretty just estimate of the progress and extent of knowledge in every age.

The first æra which is the subject of the first part of this work, begins at the deluge, and ends at the death of Jacob†.

* We have a very bad work of Pancirolus's, intitled, *Rerum memorabilium sive deperditarum*, &c. This is, in general, a very crude indigested compilation, in which he sticks at nothing. The falsest facts and most ridiculous tales are adopted for truths. This work is an example of the greatest negligence, joined to the strongest itch of making a book. In what Pancirolus says of certain arts, which, according to him, were known to the ancients, and have been since lost, there are almost as many mistakes and puerilities as words. The arts which he speaks of, either never existed, or they exist to this day, and in a more perfect state than ever. It would be easy to demonstrate this, if the work was worth the trouble.

I shall add, that if we seem to have lost some of the ancient arts, it is because they have been superseded by more useful inventions, and more commodious methods. Gunpowder and artillery, for example, have made the most part of the military machines of the ancients to be neglected. The same may be said of several other arts, which are fallen into disuse, either from new discoveries with which the world has been enriched, or because these arts have been of little importance to society. See part 2. b. 2. sect. 1. c. 2.

† This æra comprehends the ages which the Greeks name *unknown times*, because what little they knew of them scarce deserved the name of history.

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The second æra, beginning at the death of Jacob, ends at the time when kingly government was established among the Israelites *.

The third and last æra, beginning at the establishment of kingly government among the Israelites, ends at their return from the captivity; that is, a little after the accession of Cyrus to the throne of Persia †.

I have taken particular care, under each of these æras, to speak only of that knowledge and those discoveries which properly belonged to it; and anxiously avoided anticipating time, or bestowing on any age those lights which it could not possess. I must intreat the reader, never to lose sight of this observation in the perusal of this work. He will find, that if I do not speak of certain discoveries in one æra, it is because no such discoveries had then been made.

Further, these different æras were not pitched upon at random. I have endeavoured to collect, under each of them, a number of succeeding ages, in which there were no changes extremely remarkable in the state of those nations I had occasion to speak of, in which, in a word, knowledge seemed to advance by slow, and almost imperceptible degrees. I have thought proper also, to distinguish each of these æras by some event in sacred history. The truth is, in order to form a clear and distinct idea of univereal history, it is necessary to make choice of some particular one, to serve as a common standard, to which all others are to be compared and referred. The history of the people of Israel is the only one that can answer this purpose. For, besides that it is more familiarly known than any other, it carries on a continued narration from the beginning of the world, without chasm or interruption; an advantage which no profane history can pretend to. There are, it must be owned, some chronological difficulties to be met with in the Jewish history; but these are of little consequence, in com-

* This space is nearly cotemporary with what the Greeks called the *fabulous*, or *heroic times*.

† The commencement of this æra falls in pretty nearly with the beginning of those ages which are called by the Greeks the *times of history*.

P R E F A C E.

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parison of that universal obscurity and uncertainty which reign in the histories of all other nations.

I have divided my work into three parts, corresponding to the three æras I have pointed out. Each part contains the same number of books. I have pursued a method absolutely equal and uniform, through the whole three parts. The first book of the second part begins exactly where the first book of the first part ends; and so of the second, the third, &c. All the books in all the three parts march in the same order, and answer exactly to each other.

Some, perhaps, would have liked it better, if I had collected into one book, all I had to say on the origin and progress of laws; into another, all that related to arts; into a third, all that belonged to sciences; and so of the rest. By this means, it will be said, it would have been easier to draw an exact representation of the growth and improvement of each branch of knowledge. The reader might have perused at once, and without interruption, the history of each of these grand objects, and judged more easily of their different advances among the same people.

I was abundantly sensible, I will presume to say it, of all the advantages of such a disposition. But my design has been to display the whole mass of knowledge of all kinds, among each people, in each age. I could not have accomplished this design, by giving a continued history of each branch of knowledge by itself. The plan, therefore, which I have adopted, seemed to me to deserve the preference. This division appeared extremely proper to make us sensible of the difference between one nation and another at the same time, and in the same nation at different times, in all those various kinds of knowledge. This arrangement which I have contrived, enables the reader to make this comparison with great ease, and to trace, at the same time, the relation and proportion there has been, in the same ages, between the various objects I have treated of. I had a mind likewise to prevent that disgust and weariness which is apt to arise from long attention to objects essentially the same and uniform. With this view, I have thought it proper to break the thread and continuity

nuity of my several subjects, and to give the reader that relaxation and amusement occasioned by variety of matters in the same part. These are the reasons which have determined me to divide the whole space of time I have undertaken to examine in this work, into three æras, which form so many different parts, perfectly resembling each other in their order and contexture.

It will be, perhaps, demanded, why I have not begun my inquiries before the deluge, and for what reason I have passed over in silence all the ages prior to that event. It would be very easy to answer that question, and give satisfying reasons for my not going higher than the æra which I have thought proper to chuse.

The history of the ages before the deluge, furnishes but few materials for the subject of our inquiries. Moses has related only those grand events which it was necessary for mankind to be acquainted with, and suppressed all details which would have served only to gratify an idle curiosity. Besides, it is of little consequence to us, what the antediluvian state of mankind was. The devastations occasioned by the deluge, joined to the confusion of tongues and dispersion of families, have almost entirely changed the face of nature, and rendered this a new world. We may consider, therefore, the times which immediately succeeded that deplorable catastrophe, as in some sort the first ages and infancy of the world, when mankind were reduced almost to the same state as at first. For which reason, I am of opinion, that we may fix the date of the origin of the far greatest part of laws, arts, and sciences, posterior to the deluge; as the few traces of antediluvian knowledge which might have escaped that terrible desolation, were afterwards greatly defaced and obscured, if not entirely lost.

It may be demanded further, why I have confined myself to the æra of the accession of Cyrus to the throne of Babylon, and what has determined me not to extend my views beyond that period. It will not be more difficult to answer this question than the first.

I have not undertaken to give a complete and finished history of laws, arts, and sciences among the ancient nations.

tions. I proposed only to discover their origin, and their first improvements. I imagine, I have sufficiently answered this intention, by examining all the ages which intervened between the deluge and the days of Cyrus. At this æra, the picture of the world is so distinct and fair, that it will be easy to follow the footsteps of the human understanding, and form an exact idea of its further improvements and discoveries. At this period too, we behold the total fall and annihilation of all the most ancient monarchies, those of the Babylonians, the Assyrians, the Medes, the Lydians, the Phœnicians, and Egyptians *. Cyrus and his son united them all to the throne of Persia, and formed one mighty empire out of the ruins of all these different kingdoms. From this time, the several nations I have named, ceased to form distinct and independent sovereignties. All the discoveries, therefore, which these nations have had the honour to make, belong entirely to the ages included in this work; and these discoveries, undoubtedly, comprehend the origin of laws, arts, and sciences, and their first improvements.

With respect to the Greeks, their laws were for the most part formed before the period to which I have confined myself. Lycurgus flourished a long while, and Solon also some little time before Cyrus. As to the arts and sciences, the Greeks had received the fundamental principles of them long before this æra. They had even before this time made some considerable progress. We may affirm also, that their manners were then much the same as in succeeding ages. I should then have wandered from my original design, if I had carried my inquiries any lower than the age of Cyrus. We might add, that the bright ages of Greece, those of Pericles, Alexander, Plato, Aristotle, Apelles, Phidias, Sophocles, Euripides,

* Though the Chinese history, according to the common opinion, is nearly as ancient as that of the Babylonians, Egyptians, or any other nation I have mentioned, I do not design to make a distinct article of it. My reason for this is, that we are not so much concerned to know the progress and improvement of laws, arts, and sciences, among the Chinese, as among the Babylonians, Egyptians, Phœnicians, and Greeks. For we derive all our laws, arts, and sciences, from these last nations, by an uninterrupted chain; whereas we have learned hardly any thing from the Chinese. It is even but a few ages since we knew any thing of them. We are not therefore so much interested in the progress of their knowledge, as in that of those nations who have been our first teachers and preceptors.

pides, &c. are so well known, that it would be difficult to throw any new light upon them. We cannot speak of them without being every moment in danger of repeating what has been already said in several works, which are in every body's hands. These are the reasons which determined me not to extend my views beyond the period which I have chosen.

Let us now say a few words concerning the order in which I have ranged the several subjects of this work.

I speak first of the origin of laws, policy, and government, because arts, sciences, and, in a word, all discoveries have had their origin and their improvements in settled and civilized societies. But such societies could never have been formed without the help of laws, and a government founded on certain principles.

The arts, properly so called, come next. Their discovery, and more especially their improvement, are the work of well-regulated societies, particularly of such as have settled early, and have always inhabited the same spot; which nothing but agriculture could enable them to do. For this reason, I have treated of the origin of agriculture before that of all other arts, as it has been the occasion in a great measure of their invention, multiplicity, and progress.

I have thought proper to place the article of the sciences immediately after that of the arts, because they owe their origin to mechanical operations without rules or principles. It was by little and little, by a long course of experience, trials, and reflections, that mankind were enlightened, that they formed principles and systems, and brought their discoveries and their knowledge to that degree of perfection which deserves the name of *science*.

After this, I treat of the origin of commerce and navigation. The reason is extremely obvious, why I did not introduce these two subjects, till after I had represented the origin and first improvements of the arts and sciences. For there could be no such thing as a regular and settled commerce, till after the invention of a certain number of arts and sciences. The same may be said, and with still better reason, of navigation. Without some smattering at least in arithmetic,
astronomy

astronomy and mechanics, commerce and navigation, could never have existed,

I may say the same of the military art, which I place after commerce and navigation. We must distinguish between mere fighting and the art of war. Mankind did not arrive at any skill in the art of making war, till after they had formed some notions, not only of the practical part, but also of the theory and political system of that art. Accordingly the military art languished a long time in a state of infancy and imperfection.

I have reserved for the last article in each part, the manners and customs of the several nations I had occasion to treat of, in each of the three æras which I have chosen. I should have thought my work defective in an essential part, if I had omitted to draw this picture of manners and customs. I have already observed, that there is an intimate relation between the manners of a nation, and the arts and sciences which it cultivates. Their influence upon each other is reciprocal.

As chronology is the basis of my work, and as I have endeavoured to follow it as strictly as possible; I have added to each of the three parts, a chronological table, which presents at one glance, and on the same line, all the principal events which happened in the same age, among the several people I have had occasion to mention. This, I imagined, would enable the reader, with greater facility, to discern the difference between one æra and another, and to compare one nation with another in the same ages.

Nothing now remains but to give some account of the notes at the bottom of the pages. They are of two kinds. Some of them are designed for proofs and vindications, and sometimes even illustrations of the text. The others are intended to discuss and resolve such difficulties and contradictions as pretty often occur in the history of ancient nations. These two kinds of notes are distinguished from the quotations of authors, by being marked with different characters. I use the letters of the alphabet for pointing out the quotations, and the Arabian cyphers, between two parentheses, for the notes *.

* In the translation, the quotations are denoted by the letters of the alphabet; and the notes mostly by the marks of reference, * † ‡.

Besides

Besides these notes, I have placed, at the end of each volume, a few critical dissertations on certain difficult and intricate points, which necessarily required a longer disquisition than could well be comprehended in a note at the bottom of the page. The greatest part of these dissertations are designed to establish the truth of some particular opinions which I have seen reason to adopt and propose.

In unfolding the origin of laws, arts, and sciences, and investigating their first improvements among ancient nations, I have indulged conjecture as little as it was possible; but have followed, as strictly as I could, the history and order of facts. This is a principle which must never be departed from in writing on such a subject as this, otherwise we shall give the history of our own imaginations, and not of real events. We must first be assured that the fact on which we build is well ascertained, and then, however extraordinary it may appear, we must subject our imagination to reality. To prove that a thing is improbable, is not a sufficient proof that it is false. Has not experience often shewn us that what is true, is not always likely? Because a fact contradicts a favourite hypothesis, is this a sufficient reason to reject it? Can metaphysical reasoning destroy historical evidence. Mankind are not condemned to the hard necessity of fluctuating in perpetual doubts, about the principal facts which have been transmitted to us by history and tradition. The most important events, such as the formation of nations, the origin of laws, arts, and sciences, are known. We must not think, that these things are quite imperceptible, even in the remotest ages of antiquity. All that is related about them, is by no means arbitrary, uncertain, and problematical. Ingenuity of mind and integrity of heart would be sufficient to convince us of this precious truth, if we could but impose silence on our presumptuous vanity, and guard against our little prepossessions, which often mislead us a great deal more than we imagine.

When I found myself quite destitute of facts and historical monuments, particularly in the first ages, I consulted what has been said, both by ancient and modern writers, on the manners of savage nations. I imagined, that the conduct of these

these nations would give us pretty clear and just ideas of the state of the first wandering colonies, immediately after the confusion of tongues and dispersion of families. We may collect both from ancient and modern relations of this kind, several points of comparison, capable of removing many doubts which might arise about certain extraordinary facts, which I have thought proper to build upon. The relations concerning America in particular, have been extremely useful to me on this article. We may judge of the state of the ancient world for some time after the deluge, by the condition of the greatest part of the new world when it was first discovered. In comparing what the first adventurers have told us concerning America, with what antiquity has transmitted to us concerning the manner in which the inhabitants of our continent lived in those times which were reckoned the first ages of the world, we cannot but perceive the most evident and striking resemblance and conformity. I have, therefore, pretty often compared the relations of modern travellers with those of ancient historians, and intermingled their narrations, with a design to support the testimony of ancient writers, to shew the possibility, and even reality of certain facts which they relate, and certain customs which they mention. These different passages thus compared and brought together, mutually support each other, and lay a solid foundation for every thing I have said concerning the progress of the human understanding, in its improvements and discoveries, which I date from the deluge. For, as I have already observed, whatever knowledge mankind had acquired before that time, was almost entirely lost in that terrible desolation.

Finally, I advance nothing without pointing out the sources from whence it was taken, and quoting my authorities; and that the reader may be the better able to examine my quotations, and judge whether I have applied them properly, I add a table of authors used in this work, specifying the editions which I have followed. As I have always taken care to name the very page in which the words I refer to may be found, the verification of my quotations will not be difficult. This, by the by, is what every writer on historical subjects

jects ought to do. It is not sufficient to satisfy and convince the reader of the truth of the facts advanced, simply to quote the author from whence they are taken; it is necessary not only to name the book, but the very page. I know a great number of modern writers, who, making use of passages taken, for example, from Herodotus, Diodorus, or Strabo, &c. content themselves with only citing Herodotus, Diodorus, or Strabo, book 1. Such vague quotations are not enough. How is it possible to find, perhaps a single half-sentence in 89 folio pages of which the first book of Herodotus consists, or in 111 which compose that of Diodorus, or in 116 contained in the first book of Strabo? I say more; such kind of quotations may justly be suspected of infidelity and imposition. I can speak in this manner from conviction and experience.

I shall conclude this preface with an observation, which I intreat the reader never to lose sight of in the perusal of this work. What I advance concerning the invention of the most necessary arts, and the origin of sciences, can only properly be applied to those colonies, which, after the confusion of tongues and dispersion of families, did not settle soon, but led a wandering and vagabond life for a certain time. It is unquestionable, that these colonies lost all traces of the arts and sciences, and were under a necessity of inventing them anew. The case was different with those families which settled early, especially with such as continued to dwell in the same districts where Noah and his family fixed immediately after the deluge. We cannot doubt but these families, on the contrary, preserved the fundamental principles of the arts and sciences, when we perceive all useful discoveries proceeding from the countries where they dwelt, as from a common centre, and from thence spreading over all the world. I repeat it again, therefore, that all I have said concerning the origin of arts and sciences, can, in strictness, be applied only to those colonies who preferred a vagabond to a sedentary life, and by that means fell into a state of ignorance and brutality.

A D V E R-

ADVERTISEMENT

By the TRANSLATOR.

THE President DE GOGUET has been so full in his preface, as to render any further account of his work unnecessary on the part of the translator. But as the author has spoken with great freedom both of ancient and modern writers, it may be proper to observe, that, in general, we think his criticism just and new, and his objections unanswerable, with exception only to what he says of our learned countryman Dr POCOCKE.

WE hope to be easily excused this reflection in favour of that truly respectable writer, to whom the learned world is so much obliged for his elaborate researches into the remains of antiquity, and for the immense pains he has taken to illustrate them.

WE refer the reader to *The description of the East*, published in 1743. There he will see how much the President himself has been obliged to a work, which, we are sorry to say, he has treated very unhandfomely. We think the account of the ancient architecture of the Egyptians in the first volume perspicuous and satisfactory, and the discovery of their ignorance of vaults and arches due only to that work. (See the Origin of laws, vol. 3. p. 74.)

xviii A D V E R T I S E M E N T.

IN the description of the sepulchre of Ofymanduas, which the President treats as conjectural*, Dr Pococke only says, that the grand building which he saw at Luxerein or Lachor, answers very well to the particular description Diodorus gives of that sepulchre, and accordingly lays it before the reader almost word for word. (See Diodorus, l. i. p. 44. & 45.). M. the President says, that Diodorus borrowed from Hecataeus, a writer of no credit. It may be so; yet is that building clearly described, and answers very well to the particular description Diodorus gives of the sepulchre of Ofymanduas. (See Descript. of the East, vol. i. p. 106. 107. et seq.)

WE thought it our duty to say thus much; not that the Bishop of Ossory can stand in need of such help for the support of a character already so well established, but that we were unwilling to suffer a censure so unmerited to pass without animadversion.

IN the 3d volume of this work, p. 208. there is this note: "For what we ought to think of the
" arts, sciences, laws, civil polity, and *morals* of
" the Chinese, see Anson's voyage, l. 3. c. 10."

TALKING of the very unfavourable account there given of the manners of the Chinese with an eminent

* Origin of laws, &c. vol. 2. p. 146.

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judge, to whom the translator has the honour of being known, he was pleased to communicate the following anecdote.

WHEN we hear the character of a private person loaded with reproach founded on real or pretended facts, which we have no means of contradicting, though unknown to us, it is natural, for the sake of human nature, to wish that they may not be true. But if we happen to be furnished with indisputable evidence of the virtue of that person in other instances, a mind of any benevolence will seize with pleasure an opportunity of urging them in his vindication. How much more should we be influenced by this principle of equity where a populous nation is concerned?

WE can assure the public, that this relation is well authenticated. It forms a very striking contrast with the picture of the Chinese drawn by Lord Anson's chaplain. We cannot but be pleased with an occasion of doing this piece of justice to the hospitality of that empire, as well as to the gratitude of the relator; and therefore present it to our readers in his own words.

“ IN December 1728, the ship Prince Edward,
 “ burthen 450 tons, (whereof Mess. John Stephen-
 “ son and Samuel Harrison were supracargoes, Tho-
 “ mas Cross captain, myself Alexander Wedderburn

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“ purser,

“ purser, three mates, and 100 sailors, petty officers
“ included), sailed from Calcutta in Bengal, a town
“ situated upon a branch of the river Ganges, upon
“ an intended voyage to Surat, Madras, and Canton
“ in China; with a cargo amounting in value to
“ 60,000 l. Sterling. About the middle of Septem-
“ ber 1729, having advanced towards the coast of
“ China, as far as the latitude of eighteen degrees or
“ thereabouts, we were attacked by a severe storm,
“ which continued with little abatement till the 25th
“ of that month; by which time we had got in with
“ the land, but so far to the westward of our port, as a
“ place called *Timpau*; where, being unable to resist
“ the violence of the weather any longer, it was con-
“ cluded to run the ship ashore, as the most eligible
“ measure, both for the safety of our lives, and a
“ salvage of cargo. The ship soon stranded, and
“ fifty-two men perished, the captain and two of the
“ mates being in that number; but the supracargoes,
“ one of the mates, and myself, had the good fortune
“ to escape ashore before the ship separated. Under
“ these circumstances, we addressed ourselves to the
“ mandarines governing that part of the country,
“ who, indeed, received us with marks of humanity
“ and kindness far exceeding our expectations; not
“ only appointing us a guard for our protection, but
“ also ordering out the natives to assist in fishing upon
“ the wreck; by which means we, at that time, reco-
“ vered 5000 l. in bullion, and afterwards about
“ 10,000 l. more. Before we set forward for Canton,
“ the

“ the friendship and exactness of our benefactors were
 “ very remarkable ; who, having fixed a time for our
 “ attendance, took a particular account of our mo-
 “ ney, the names of the persons saved, and furnish-
 “ ing us with an escort to conduct us through their
 “ district, consigned us, dead or alive, to one Sugua
 “ at Canton, a merchant well known to the English
 “ there. And thus were we passed from one district
 “ to another, till we reached our port ; which we did in
 “ nine days, travelling sometimes by land and some-
 “ times by water. Here too those in the administra-
 “ tion shewed us their benevolence, by representing
 “ our situation to the Emperor, then residing at Pe-
 “ kin ; who soon sent orders for our relief, and an
 “ order to distribute a sum of money amongst us, in
 “ order to enable us to return from whence we came.
 “ These orders were thus executed : Being appointed
 “ to attend the Chimtuck, Hoppo, and other state-
 “ officers met on that occasion, each of us received
 “ the above bounty in a bag, (whereon was expressed,
 “ in Chinese characters, the nature of the gift), in
 “ the following proportions, viz. first supracargo,
 “ 450 tales ; second supracargo, 350 tales ; myself
 “ Alexander Wedderburn, 250 tales, or 100 l. Ster-
 “ ling ; the mate, 75 tales ; and each common sailor
 “ 15 tales ; in all 2900 tales, or 800 l. Sterling.”

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37.	2.	<i>for</i> have <i>read</i> had
38.	38.	<i>read</i> far from
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hand she

BOL

Which comprehends from the DELUGE to the Death of JACOB inclusive.

1770. Confusion of Tongues, and Disperſion of Families 2224.

E M P I R E S.

[illegible]

CHRON

Year

2273.	1731.	Rape of DINAH.
2288.	1712.	Death of ISAAC. ESAU retires beyond Jordan into the mountains of the Horites, and settles in Seir, where he becomes very powerful. Gen. c. 36.
2276.	1728.	JOSEPH sold into Egypt.
2289.	1715.	JOSEPH appears before PHARAOH.
		About this time lived Job. Arabia Felix seems to have been his native country and abode. See our dissertation.
2302.	1698.	JOSEPH restores to the Egyptians their cattle and lands, on condition of their paying the king the fifth of their produce. See Gen. c. 47. v. 15. &c.
2315.	1690.	Death of JACOB.

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The ORIGIN of LAWS, ARTS,
and SCIENCES, and their PRO-
GRESS among the most ANCIENT
NATIONS.

INTRODUCTION.

Of the state of mankind immediately after the deluge.

THE family of Noah remained no longer united in one society on the plains of Shinar, than was necessary for their increase and security. As soon as they were become sufficiently numerous, God was pleased to disperse them into the different regions of the earth, about the time of the birth of Peleg, nearly 150 years after the deluge. It appears, that these new inhabitants of the earth had no design to separate. They were sometimes forced to part in order to seek subsistence: but the fear of losing each other, in their various excursions, made them use all the precautions they could think of to prevent so great a misfortune. With this view they formed the design of building a city, and raising a tower in it to a prodigious height, that it might be seen at a great distance, and serve them for a signal and centre of reunion *. But Providence judging their separation necessary for the more speedy repopling of the earth, employed the most effectual means to oblige them to disperse. All mankind at that time spoke

* Here is what scripture, according to the Hebrew text, makes the children of Noah speak of this enterprize: הָבָה בְּנֵה לָנוּ עִיר וּמִגְדָּל וּרְאֵשׁוּ בְּשִׁמְיֵם וְנַעֲשֶׂה לָנוּ שֵׁם פֶּן נִפְּוֹץ עַל־פְּנֵי כָל הָאָרֶץ.

All translators have rendered these words, וְנַעֲשֶׂה לָנוּ שֵׁם פֶּן נִפְּוֹץ

spoke the same language *. The Supreme Being dissolved this powerful bond of union, by confounding their tongues in such a manner, that not understanding each other, they separated, and directed their steps to different parts of the world ^b.

I

by, "Let us make us a name, lest we be scattered abroad," Gen. c. 11. v. 4. It is easy to remark, that the sense of this expression is neither clear nor connected. The Septuagint and Vulgate translate a little differently. They have both taken the word **שֵׁם** *Schem* in the sense of *name*; but they have translated **לִפְנֵי** *phen*, by *antequam*, *before that*. Both the versions, bear, "Let us make us a name before that we be dispersed."

None of these versions give us a clear idea of the motives which induced the sons of Noah to build the tower of Babel; yet nothing is more easy than to render this passage intelligible. We need only attend to the different interpretations that the word **שֵׁם** *schem* will bear. The word in effect signifies a mark, a signal, and a name. Interpreters, by fixing on this last signification, have rendered the passage obscure; but by taking it in the sense of a mark or signal, it becomes intelligible. Moses makes the sons of Noah say, "Let us build a tower whose top may reach unto heaven, and let us make it a mark or signal lest we be scattered", &c.

Besides, the analogy of languages confirms this interpretation. The Greek words *σημα*, *σημαῖον*, which signify a mark or sign, are derived from the Hebrew **שֵׁם**, *schem*. See Perizon. origin. Babyl. c. 10. p. 168. c. 11. p. 193. c. 12. p. 223.

* Gen. c. 11. v. 1. 6.

^b Ibid. v. 8. 9. Some commentators pretend that there were no new languages formed at the dispersion. According to them, God only sowed discord among the builders of Babel. They maintain, that these words, *terra erat labii unius*, signify only an agreement of sentiment and conformity of design in those who undertook to erect that monument. They quote several expressions nearly parallel, which mean no more than being perfectly agreed in the same undertaking. For example, it is said in Joshua, that the kings of Canaan gathered themselves together to fight against Joshua with *one mouth* *, that is to say, with one accord. For which reason the Septuagint renders it *ἀπὸ πάντες*, all together; and the Vulgate, *uno animo eademque sententia*. They quote also other passages, where these expressions, *uno ore*, with *one mouth* †, *humero uno*, with *one shoulder* ‡, signify with one consent. They mention another text which seems more directly to favour this interpretation. It is a psalm in which David prays to God to divide the tongues of his enemies, that is to say, to sow discord amongst them §.

I acknowledge, that in these passages the expressions *uno ore*, *uno humero*, &c. mean only consent of mind. But it is very evident, that Moses in this place designed to express something more than merely the concord and union of the descendents of Noah. Moses, in order to prepare his reader for what he had to say about the confusion of languages at Babel, takes notice, that until that time, all mankind spoke the same language. *Ecce unus est populus, et unum labium omnibus & sermonum eorundem*. And as if he intended still farther to prevent the ambiguity of these terms, *unum*

* c. 9. v. 2. † 1 Kings c. 22. v. 13. ‡ Sophon. c. 3. v. 9. § Ps. 54. v. 10.

labium,

I shall not undertake to describe the routes of the several colonies which were then formed. Such a disquisition would be altogether foreign to my present purpose. I shall only observe, that if we reflect ever so little, with how much ease and expedition the Savages, Tartars, and Arabians of our days, transport themselves and their whole families to very great distances, we shall soon be convinced, that those first men, naturally robust, accustomed to a life of labour, and having few wants, when forced to quit their native soil in search of new settlements, might in a very little time spread themselves over the different climates of our hemisphere.

But this dispersion of mankind must necessarily have considerably diminished the primitive knowledge which they had hitherto been able to preserve. All society being dissolved by this confusion of tongues, and families living detached from each other, they sunk in a little time into the profoundest ignorance. Add to this, the consideration of the tumult and disorder inseparable from new establishments, and we shall easily conceive how there was a time, in which almost all this world was plunged into the most deplorable barbarity. Men wandered in the woods and fields, without laws, without leaders, or any form of government. Their ferocity became so great, that many of them devoured each other^c. All kinds of knowledge, even the most common and necessary, were so much neglected, that not a few had forgot even the use of fire^d. It is to these unhappy times we must refer what profane hi-

labium, he adds, *et sermonum eorundem, they made use of the same words*; an expression which determines the sense of this passage, the sense of which is also completely explained in the sequel of the narration of Moses. God, says he, foreseeing that so long as this union should subsist among mankind, they would never desist from their enterprise, employed the most proper means to make them abandon it; that was by confounding their language, and preventing their understanding each other. *Venite, descendamus et confundamus ibi linguam eorum, ut non audiat unusquisque vocem proximi sui*. I am persuaded, that, after comparing these two texts, we can no longer entertain any doubt concerning the true meaning of the passage we have been now examining.

^c Hom. Odyss. l. 9. v. 291. &c. l. 10. v. 116. &c.; Plato in Epinomi, p. 1001. E.; Diod. l. 1. p. 17. & 100.; Athen. l. 14. p. 660. F.; Stob. eclog. phys. l. 1. p. 18.; Mem. de Trev. Sept. 1751. p. 211.; Mem. de l'acad. des inscript. t. 5. mem. p. 118. &c. t. 9. mem. p. 203.

^d See infra, book 2. *initio*.

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^c Hom. Odyss. l. 9. v. 291. &c. l. 10. v. 116. &c.; Plato in Epinomi, p. 1001. E.; Diod. l. 1. p. 17. & 100.; Athen. l. 14. p. 660. F.; Stob. eclog. phys. l. 1. p. 18.; Mem. de Trev. Sept. 1751. p. 211.; Mem. de l'acad. des inscript. t. 5. mem. p. 118. &c. t. 9. mem. p. 203.

^d See infra, book 2. initio.

storians relate of the miseries which afflicted the first ages of the world. All ancient traditions declare that the first men led a life very little different from that of beasts *.

We shall find no difficulty in believing these relations, if we cast our eyes on what ancient authors tell us of the state of several countries even in their own times †, a state the reality of which is confirmed by modern relations ‡. Travellers inform us, that even at this day, in some parts of the world, they meet with men who are strangers to all social intercourse, of a character so cruel and ferocious, that they live in perpetual war, destroying, and even devouring each other. These wretched people, void of all the principles of humanity, without laws, polity, or government, live in dens and caverns, and differ but very little from the brute creation. Their food consists of some fruits and roots with which the woods supply them; for want of skill and industry they can seldom procure more solid nourishment. In a word, not having even the most common and obvious notions, they have nothing of humanity but the external figure §.

These savage people exactly answer the description given us by historians of the ancient state of mankind. We see even from scripture, that, soon after the dispersion, the precepts and example of Noah were so generally forgotten, that

* Plato in *Protag.* p. 224. F. de leg. l. 3. p. 804. &c.; Arist. de rep. l. 1. c. 2. p. 297. E.; Euripid. apud. Plut. de placit. philos. l. 1. c. 7.; Berof. apud Syncel. p. 28. C.; Sallust. de bel. Jug. c. 21.; Cic. *pro P.* Sectio. n. 42. de invent. l. 1. n. 2.; Diod. l. 1. p. 11. 12. 52. 100. l. 5. p. 387.; Strab. l. 4. p. 306. l. 11. p. 787. l. 13. p. 885.; Horat. *serm.* l. 1. sat. 3. v. 99. & seq.; Hygin. *fab.* 143.; Juv. *sat.* 15. v. 151. &c.; Stob. *ecl. phys.* l. 1. p. 18.; Macrobi. *in somn. Scip.* l. 2. c. 10. p. 153.; Martini *hist. de la Chine*, l. 1. p. 18. 19.; Let. *edif.* t. 26. p. 64. 65.; *Hist. des Incas*, t. 1. p. 12. &c. p. 189. & 197. *Acoft. hist. des Ind.* l. 7. c. 2. See also les *mem. de l'acad. des inscript.* t. 9. *mem.* p. 203.

† Herod. l. 4. n. 18. 102. 106.; Arist. de rep. l. 8. c. 4.; Diod. l. 5. p. 355.; Strab. l. 5. p. 458.; Arrian. *perip. mar. eryth.* p. 177.; Plin. l. 4. *sect.* 26. p. 218. l. 6. *sect.* 20. & 35. l. 7. *sect.* 2. *init.* Paus. l. 10. c. 22.; Sext. *Empiric.* *Pyrrhon.* *Hyp.* l. 3. n. 24. p. 178. 179.

‡ Voyage de V. le Blanc, p. 144. 145. 157; *Hist. nat. de l'Island.* t. 2. p. 21. 236. 244. 252. 266.; *Hist. des isles Mariannes*, p. 44. 51. 53.; *Lettr. edif.* t. 2. p. 177. t. 5. p. 278. t. 10. p. 193. t. 25. p. 3-4-8-77-261.; N. *relat. de la France equinox*, p. 235.; *Hist. gen. des voyages*, t. 1. p. 170. & 197. t. 2. p. 308. Voyage de Frezier, p. 54. & 66.; *Rec. des voyages au Nordt*, t. 8. p. 403.

even the ancestors of Abraham were plunged in idolatryⁱ. When Jacob went into Mesopotamia, he found idolatry mixed with the worship of the true God in the family of his uncle Laban^k. After such facts as these, it is not in the least surprising to find the primitive traditions so darkened and disfigured by the most ridiculous fables among the Heathen nations.

As to the arts and sciences, there is no doubt, but some families preserved themselves from that barbarity and ignorance which succeeded the confusion of languages, and the dispersion of mankind. The most useful and necessary discoveries were never entirely lost. The precious seeds of these were preserved by the families who remained in the plains of Shinar, and the adjacent countries, where mankind had been first planted after the flood. Neither were these branches of knowledge altogether forgotten by those colonies who took up an early fixed residence: for example, those who settled in Persia, Syria, and Egypt. By their means, the several parts of human knowledge were preserved, propagated, and improved. But all the rest of mankind, excepting these few families, I repeat it again, led the life of savages and barbarians. The ancient state of the human race may very well be compared to that of the Cyclops, that is to say, the ancient inhabitants of Sicily, as represented by Homer^l.

“The Cyclops,” says this poet, “know no laws. Each governs his family, and rules over his wife and children. They trouble not themselves with the affairs of their neighbours, and think not themselves interested in them. Accordingly, they have no assemblies to deliberate on public affairs. They are governed by no general laws to regulate their manners and their actions. They neither plant nor sow. They are fed by the fruits which the earth produces spontaneously. Their abode is on the summits of mountains, and caverns serve them for a retreat^m.” Be-

ⁱ Josh. c. 24. v. 2. & 14.

^k Gen. c. 31. v. 19. & 30. c. 35. v. 2. & 4.

^l Thucyd. l. 6. n. 2.; Bochart has very clearly proved, that the people to whom the Greeks gave the name of Cyclops, inhabited the western part of Sicily. Chan. l. 1. c. 30. p. 619.

^m Odyss. l. 9. v. 106. & seq.

hold a lively picture of the manner, in which almost all the families of the world lived immediately after their dispersion.

This savage unsociable life could not be of long continuance with regard to a great part of mankind. So many motives concurred to induce families to associate and mingle with each other, that several of them must have united very early. This were the proper place to inquire in what manner this reunion of mankind was brought about. But as no certain monuments are now remaining of these first transactions, and as there is no end of forming conjectures and hypotheses, we shall not enter into any discussion concerning the origin of these first societies. Let us confine our inquiries to those states which were formed in that period on the consideration of which we are just going to enter, and let us see what was the most ancient form of government.

PART I.

From the deluge to the death of Jacob, a space
of about 700 years.

BOOK I.

Of the origin of laws and government.

THE reunion of families, by whatever means it was brought about, could not have taken place but by an agreement of wills on certain general objects. When we view society as the effect of unanimous concord, it necessarily supposes certain covenants. These covenants imply conditions. It is these conditions which are to be considered as the first laws, by which societies were governed. These, also, are the origin of all the political regulations which have been successively established.

It was not necessary, that either the first covenants, or the conditions on which they were founded, should be express: It was sufficient, in many cases, that they were tacitly understood. Such were, for example, the rule not to injure each other; — that of being faithful to our engagements; — not to rob another of his lawful possessions; — That the son should be heir to his father; — That he who would disturb society, be restrained, &c. There was no need of any particular solemnities in establishing such rules and maxims as these. They derive their origin from those sentiments of equity and justice which GOD has ingraven on the hearts of all men. They are taught us by that internal light, which enables us to distinguish between right and wrong: dictated
by

by that voice of nature, which will make itself be heard, or will alarm the soul with tormenting remorse as often as its dictates are disobeyed.

We are not therefore to consider the first laws of society, as the fruit of any deliberation, confirmed by solemn and pre-meditated acts. They were naturally established by a tacit consent, a kind of engagement to which men are naturally very much inclined. Even political authority was established in this manner, by a tacit agreement between those who submitted to it, and those who exercised it.

This kind of tacit agreement was also the origin of those **CUSTOMS**, which, for a long time, were the only laws known among mankind. Ancient authors produce examples of nations who knew no other laws. Modern travellers do the same. The Lycians had no written laws, but were governed entirely by customs^a. In the Indies, from time immemorial, their judgments rested only on certain usages transmitted from father to son^b. To this day, we cannot discover that there are any written laws at Mazulipatan^c, without speaking of many other nations, which, even at this time, have no other laws than those of custom^d. It was the same thing among the ancients^e. These early customs or usages served them for rules and precedents in their decisions; and these customs were founded only upon certain compacts, by which men tacitly bound themselves to each other at the reunion of families. These are, I repeat it, the conditions annexed to these covenants, which we ought to regard as the first laws.

But these first laws, the only ones known at the commencement of society, were not sufficient to preserve the peace, or secure the tranquillity of mankind. They were neither sufficiently known, distinct, nor comprehensive.

^a Heraclid. Pont. de polit. verbo λυκίων.

^b Strabo, l. 15. p. 1035.; Let. edific. t. 14. p. 326. 327. 328.

^c Rec. des voy. qui ont servi à l'établissement de com. des Indes, t. 4. p. 392

^d Ibid. p. 309.; Jour. des scav. Mars 1675. p. 45. 46.; Meurs des sauvages t. 1. p. 501.; Hist. Mar. isles, p. 51.; Hist. nat. de l'Islande, t. 2. p. 195. 244. Hist. gen. des voy. t. 3. p. 245. 246. t. 6. p. 8.; Voy. Hud. bay. t. 2. p. 95

^e Plato de leg. l. 3. p. 806. A.

Their

Their authority must have been very arbitrary. It was proportioned to the use which every one made of his reason; and we know but too well, that man, left to himself, is more apt to listen to his passions, than to reason and equity. There was also equal danger in the application and execution of these primitive laws.

In the state of nature, every man was the judge and avenger of the wrongs he imagined he had received. It must have often happened, that the person injured, exceeded all the bounds of equity in the reparation he exacted. Very often, too, individuals were not strong enough to put the law in execution. These natural laws, therefore, could contribute but weakly to the peace and happiness of society. There was, indeed, one common law, but there was no common judge, acknowledged as such, and appointed to apply it to particular cases. Besides, no body was invested with sufficient authority and power to put it in execution. It is no wonder then, that the law being without force, and ill executed, should be itself a source of the greatest inconveniencies.

These defects and imperfections of primitive society, must have been productive of much disquiet and trouble. Accordingly men did not derive the same advantages from their first establishments, as they have done from those which have been formed in succeeding ages. Fear and necessity brought some families together; but how licentious must men have been, who knew so little of the social duties, as did the descendents of Noah after their dispersion! The most important care of a society, even in its most imperfect state, is that of its own preservation. The miseries to which the first associations of mankind found themselves exposed, soon put them upon seeking out methods to remedy and prevent them.

Man was created free and independent; but reason and experience soon convinced him, that he could not enjoy peace, security, or even liberty, if every individual was allowed to follow the dictates of his own caprice and passion. Man then discovered, that, for his own interest, he ought to resign the unlimited exercise of his will; and that it was necessa-

ry for the good of the whole, that one part of society should be subject to another. It is this conviction that induced families, when they formed themselves into states, voluntarily to establish a real inequality, under conditions which restrained its excess. From this principle arose the different forms of government to which nations have submitted.

The first form of government mentioned in history, is the monarchical. This, without doubt, was the most ancient and the most universally established. The scriptures attest it^f. The most ancient nations spoken of by Moses, the Babylonians, Assyrians, Egyptians, Elamites, those who dwelt on the banks of Jordan, and in Palestine, were all subject to kings. Profane history agrees perfectly with the sacred in this particular^g. Homer always exalts the prerogatives of royalty, and the advantages of subordination^h. This poet seems even to have had no idea of any other form of government. During that long series of ages of which the Chinese boast, they were all along governed by kingsⁱ. They cannot form any notion of a republic^k. The same may be said of all the eastern nations^l. We may add too, that the most ancient republics, such as Athens, Rome, &c. were monarchies at first.

It is not difficult to discover, why the idea of monarchical government was the first that presented itself to the minds of men. When they resolved to establish some order in society, it was more natural and obvious to range themselves under one chief, than under many. Besides, kingly power bore an exact resemblance to the authority which fathers originally enjoyed over their children: they were, in these early times, the heads and legislators of their own family. We see an example of this authority, in the punishment adjudged to Thamar, by

^f Gen. c. 10. v. 10. 1 Sam. c. 8. v. 20.

^g Sanchon. ap. Euseb. praep. evang. p. 36.; Plato de leg. l. 4. p. 829. E. in Critia, p. 1103.; Arist. de rep. l. 1. c. 2. l. 3. c. 15.; Polyb. l. 6. *init.*; Berof. ap. Syncell. p. 307.; Cicero de leg. l. 3. n. 2. de offic. l. 2. n. 12.; Sal. de bel. Cat. n. 1.; Diod. l. 1. p. 12.; Dion. Hal. l. 5. p. 336.; Justin. l. 1. *init.* Paus. l. 9. c. 1.; Hist. des Incas, t. 1. *init.*

^h Iliad. l. 2. v. 204. & seq.

ⁱ Mart. hist. de la Chin. l. 1. p. 15.

^k Le Compt. mem. Ch. t. 2. let. 9. p. 3.

^l Chardin, t. 3. p. 212.; Rec. des voy. Holland. t. 3. p. 28.

Book I. *Of the Origin of Laws and Government.* 11

Judah her father-in-law ^m. Both Plato and Homer speak of the authority of parents over their children in ancient times ⁿ. The Gauls were sovereigns in their own houses, having power of life and death over their wives, children, and slaves ^o. In China, fathers govern their families with despotic power ^p. It appears, then, that monarchical government was formed upon the plan of the paternal ^q; with this only difference, that the first monarchs were not despotic. Despotism was introduced with great empires, and the first kingdoms were but very small. Let us now inquire, how, and by what motives royalty was established.

In the different societies that were formed after the dispersion, there were found some persons, who distinguished themselves by their superior strength, prudence, and courage. Those who possessed these talents, and these qualities, which were then more necessary than ever, soon gained the public esteem and confidence. Their constant services pleaded for them. They acquired insensibly a kind of authority. Necessity, joined to esteem, engaged men to put themselves under their direction. Let us consult the annals of all nations, and observe the manner in which history relates the origin of monarchies, and we shall see, that the first sovereigns owed their elevation to the services they had rendered to the society ^r. Holy scripture on one side, and profane history on the other, present us with two facts, perfectly applicable to the origin of the different sovereignties established in early times.

Moses informs us, that Nimrod was the first who began to be a mighty one in the earth ^s. The sacred historian immediately adds, that Nimrod was a mighty hunter ^t. Every

^m Gen. c. 38.

ⁿ Odyss. l. 9. v. 107. & seq.; Plato de leg. l. 3. p. 806.

^o Caesar de bell. Gall. l. 6. n. 17.

^p Le Comt. mem. t. 2. let. 9. p. 37. 38.

^q This idea is expressed in the name of Abimelech, one of the first sovereigns mentioned in history. *Abimelech* signifies in Hebrew, *My father king*. Le Clerc's notes on Hesiod. Theog. p. 80.

^r Arist. de rep. l. 3. c. 14. p. 357. l. 5. c. 10. p. 403. A.; Cicero de leg. l. 3. n. 2. de offic. l. 2. n. 12; Justin. l. 1. c. 1. *init.*

^s Gen. c. 10. v. 8.

^t Ibid. v. 9.

circumstance inclines us to think, that it was to this talent he owed his greatness. The earth, for some ages after the flood, was covered with forests, full of wild beasts^u. Men were obliged to be constantly on their guard against their attacks^x. A man who possessed the talents necessary to destroy them, must then have been held in high consideration. Nimrod, by his hunting, so beneficial to his country, became famous. Very soon the people gathered about him; being often at their head, he accustomed them insensibly to receive and obey his orders; and by the tacit consent of those who had voluntarily put themselves under his conduct, he remained their sovereign. It was probably in this manner, that he founded the first kingdom of which we have any knowledge. With a view to confirm his authority, he built cities^y, there to collect and fix his new subjects^z.

Herodotus furnishes us with a fact, which, though of a much later date, may enable us to judge of the motives which determined societies to establish monarchy.

This historian tells us, that the Medes, after having shaken off the yoke of the Assyrians, were some time without any form of government. They soon became a prey to the most horrid excesses and disorders. There was among them a man of great prudence and wisdom, named Dejoces. The Medes very often applied to him to decide their differences. Dejoces heard their complaints, and determined their disputes. His wisdom and discernment soon gained him the esteem of the whole country where he lived. They came even from other parts of Media to implore his assistance. But at last being oppressed by the multiplicity of affairs, which in-

^u Such was America when first discovered.

^x Plato in *Protag.* p. 224. E.; *Plut.* t. 2. p. 86. D. See le Clerc B. U. t. 6. p. 265.

^y *Gen.* c. 10. v. 10.

^z I am ignorant of the reasons why almost all who speak of Nimrod, represent him as a cruel and haughty tyrant. The scriptures do not paint him in such odious colours. It nowhere says, that he usurped the royalty by violence. I suspect Josephus as the author of that ill character Nimrod has at present. That historian has thought proper to paint this prince in the blackest colours. *Antiq.* l. 1. c. 4

But it is generally known, what credit is due to the authority of Josephus, when not supported by scripture.

creased every day, he retired. Confusion and disorder instantly returned. The Medes held a public assembly, in which it was unanimously agreed, that the only means of putting an end to their calamities, was, to elect a king. The choice fell upon Dejoces with one voice².

This fact, and the example of Nimrod, set the origin of the first sovereignties in a very clear light. Such events as those we have mentioned, or something of a like nature, probably gave birth to monarchical government every where. For the two principal functions of a monarch have always been, to dispense justice to his subjects, and march at their head in time of war. We see this very distinctly expressed in the motives mentioned by the Israelites to Samuel when they demanded a king³.

Crowns then originally were elective. But this custom could not continue long. Mankind must soon discover the advantages of a son's succeeding to his father's kingdom. Every thing pleaded in favour of the young prince. The veneration they had entertained for his father; the noble sentiments and wise instructions, it was to be presumed, he had received from him: these, and many other motives would determine nations in general to submit to the sons of their deceased monarchs. They would foresee, too, the inconveniencies annexed to the necessity of electing a new master on every vacancy of the throne. Whatever was the cause, it appears, that the most ancient monarchies were hereditary. If we read the history of all those states subject to this kind of government, we shall constantly see the son succeed his father. Among the Babylonians, Assyrians, Egyptians, Indians, Chinese, Arabians, Atlantes, among the Greeks and the Gauls,

² L. i. n. 97. & seq.

³ *Et erimus nos quoque sicut omnes gentes, & judicabit, &c.* 1 Sam. c. 8. v. 20. The best writers of antiquity have always declared in favour of monarchy. Herod. Plat. Arist. Xenoph. Isocrat. Cicero. Sen. Tacit. Plut. have regarded the monarchical government as the most advantageous and most perfect, which men have ever invented; and it is to be remarked, that most of these writers lived in republics.

it was the son ^b, and commonly the eldest son ^c, who always ascended the throne after the death of his father.

The dominions of the first monarchs were but of small extent. In ancient times, every city had its own king, who, more attentive to defend than to enlarge his dominions, confined his ambition within the limits of his own territory ^d. Sacred and profane history testify alike, how narrow were the bounds of ancient kingdoms. They cannot have been considerable, even in the east, which was the nursery of mankind. In the days of Abraham, there were five kings in the vale of Sodom ^e; that is, as many almost as there were villages. This is still more evident from the great number of kings the Israelites found in Palestine. Joshua defeated thirty-one ^f. Adoni-bezek, who died but a little after Joshua, owned, that, in his wars, he had destroyed threescore and ten kings ^g. Egypt was originally divided into several states ^h. The different provinces which at present compose the empires of China and Japan, anciently formed so many sovereignties ⁱ. For how many ages was Greece divided into a great number of petty states ^k? A few families assembled in one town, under one chief, were the whole subjects of one of these first monarchs. Africa, America, and a part of Asia, present us at this day with a picture of these ancient times. We find a great number of sovereigns in a small extent of country. Every little district has its own particular king ^l.

^b Sanchon. ap. Euseb. p. 36. B.; Plat. in Critia, p. 1103.; Herod. l. 1. n. 7.; Arist. de republ. l. 3. c. 14. p. 357.; Polyb. l. 6. *init.*; Apollod. l. 2. *init.*; Strab. l. 15. p. 1036.; Paus. l. 2. c. 34.; Syncell. p. 167. 171.; Mart. hist. de la Chin. l. 2. p. 89. 101.; Hist. des Incas, t. 1. p. 40. 365. 243.; Acoft. hist. Ind. fol. 289. R.

^c Sanch. ap. Euseb. p. 36. B.; Herod. l. 7. n. 2.; Plat. in Critia, p. 1103. 1104. in Alcib. prim. p. 441.; Diod. l. 5. p. 382. 386.; Hist. des Inc. t. 1. p. 40. t. 2. p. 68.; Let. edific. t. 14. p. 390.

^d *Intra suam cuique civitatem regna finiebantur.* Just. l. 1. c. 1. *init.*

^e Gen. c. 14. v. 8.

^f Jos. c. 12. v. 24.

^g Jud. c. 1. v. 7.

^h Euseb. praep. evan. l. 9. c. 27. p. 432. A.; Marsh. p. 25. 29.

ⁱ Anc. relat. Ind. Chin. p. 186.; Journ. des scav. Juin. 1688. p. 15. Juill. 1689. p. 319.

^k See part 2. l. 1.

^l See Bib. raison. t. 1. p. 52.; Mer. de Fran. Nov. 1717. p. 82.; Hist. gen. des voyag. t. 1. p. 93.; Recueil des voy. qui ont servi à l'établissement de la com. des Ind. Hol. t. 2. p. 493.

As to the authority of these ancient monarchs, it was contracted enough. It appears, from several monuments, that, by the constitution of these first kingdoms, the people had a great share in the government. Affairs of importance were canvassed and regulated in the general assemblies of the nation. Hemor, King of Sechem, did not agree to the propositions made him by the sons of Jacob, till he had communicated them to his subjects, and obtained their consent^m. Profane historians agree with the scriptures in representing the authority of the first sovereigns as very limitedⁿ. The kings of Egypt were subjected to very severe and troublesome restrictions^o. The power of the first kings of Greece was not much more extensive than their territories^p. The first kings of Mexico were far from being absolute^q. We may compare these ancient monarchs to the Caciques and other petty sovereigns of America^r, who have hardly any authority, but in what relates to war, alliances, and treaties of peace.

But whatever idea we form of these first sovereigns, it is still certain, that society owes its first settlement, and regular form to monarchy. It was monarchy which put an end to those direful disorders to which the world was at first exposed. Men soon felt the necessity of setting up some general rule, to control the different orders of the state, and set bounds to the spirit of independence so natural to man. They obtained this end by intrusting the forces and rights of the society in the hands of one chief. In this manner was established in every political society, that supreme power and authority which constitute their strength and security. From this form of government is derived the second species of laws of which I am going to speak.

^m Gen. c. 34. v. 20. & seq.

ⁿ Dion. Hal. l. 5. p. 336. 337. ; Diod. l. 1. p. 80. l. 3. p. 177. ; Tacit. de morib. Germ. c. 7. 11.

^o *Infra*.

^p See part 2. b. 1.

^q Acofta, l. 7. fol. 333. v.

^r See l'Escarbot. hist. N. Fran. p. 852. 853.

C H A P. I.

Of the establishment of positive laws.

THE design of the several societies in setting up a chief, and submitting to his authority, was to remedy the weakness and insufficiency of natural laws. The authority of the first sovereigns, too limited in its origin, could not remedy the abuses which were to be corrected. It was found necessary for the good of society, to intrust them with more extensive powers, to enable them to make particular regulations for improving and perfecting the first rude establishments. These regulations have justly obtained the name of laws^r. I call them POSITIVE LAWS, because the design of them is clear and pointed. These have removed the inconveniencies of primitive society. The sovereign, by publishing his laws, instructs each individual in the rules he is to follow. No one is at liberty to judge in his own cause. It is the province of the sovereign to execute the laws; and having in his hands all the force of the state, he is enabled to add weight to his decrees, and punish those who violate or infringe them^t. Lastly, it is his business to be watchful that the laws receive due obedience.

These positive laws were but very few at first, and respected only the most general interests of society. But before I enter upon any explanation, it will be proper to make some observations on the manner in which mankind lived originally.

There was a time, when mankind derived their whole subsistence from the fruits which the earth produced spontaneously, from their hunting, fishing, and their flocks. This kind of life obliged them often to change their abode, consequently they had no dwelling-place nor settled habitations. Such

^r *Arbitria principum pro legibus erant.* Just. l. 1. *init.*; Diod. l. 1. p. 18. l. 5. p. 387.; Dion. Hal. l. 10. p. 627.; Plut. t. 2. p. 356. A.; Tacit. an. l. 3. n. 26.; Euseb. chron. l. 2. p. 65.; Stob. ecl. phys. l. 1. p. 124.; Syncel. p. 125. D.; Pom. jurif. ench. de origine jur. l. 2. sect. 1.

^t *Princip. du droit pol. t. 1. c. 3.*

was the ancient manner of living, till agriculture was introduced; in this manner several nations still live, as the Scythians, Tartars, Arabians, Savages, &c.

The discovery of agriculture introduced a different set of manners. Those nations who applied to that art, were obliged to fix in a certain district. They built and inhabited cities. This kind of society having need of many more arts than were necessary for those who neglected or were ignorant of agriculture, must of consequence need also many more laws. This observation leads us to distinguish two different orders in positive laws, such as are proper to all kinds of political society in general, and such as are peculiar to a society which follows agriculture.

Laws which are equally proper for all kinds of political society, are such as are the foundation and bond of it, without which no form of government can subsist. Of this kind are the laws touching the distinction betwixt *meum* & *tuum*, that is to say, right of property; PENAL LAWS; those which settle the formalities of marriage; in a word, all laws relating to those respective obligations which mankind contract as members of one society. I am inclined to place in this rank the establishment of solemn and public worship. This, under one form or other, has had a place in all civilized nations. Such is the first class of positive laws.

In the second class I place such laws as suppose the invention of several arts, and by consequence commerce, and the frequent change of property. These laws are no more than an extension or unfolding of the former. Natural law, or, to speak with more precision, rational equity, is the foundation of both; but it is by the Civil law of each country that these last are digested and reduced to form. This form must necessarily vary, according to the climate, genius, and particular circumstances of different nations. It is in this the distinguishing characteristic of these two ranks of positive laws consist. The different manner in which this last class of positive laws has been modified in each country, constitutes the civil law of that country^u. Under this name are comprehended all those

^u Inst. § de jure nat. gen. & civ.

laws which regulate the common transactions of civil life, and the particular interests of the different members of society. Such are the laws concerning inheritances, successions, sales, contracts, &c.

Nations which live by hunting, fishing, and their flocks, cannot have many laws; being often obliged to remove from one place to another, they know no property in land, one of the principal sources of civil laws. The greatest part of mankind, as I have before observed, lived in this manner in the first ages after the dispersion. Consequently civil laws were not the first in order of time. Besides, these could not take place, till some time after the establishment of those regulations which properly constitute the being and polity of a state. This first class of positive laws, then, which form the very essence of political society of every kind, fall first under our consideration. We shall defer the regular examination of the origin of civil laws, till we come to speak of the laws and principles of government established by those nations who applied themselves to agriculture.

ARTICLE I.

Of the first rank of Positive Laws.

IT is impossible to unfold the order and series of the first political institutions with any certainty. All that has been said on that subject amounts to nothing more than mere conjecture. Necessity, occasioned by the crimes and disorders which every where prevailed, rather than deep reflection or foresight, put mankind upon making laws. It is highly probable, that most of the laws essential to the support of society, were established much about the same time. Regulations concerning property, — the punishment of crimes, — the ceremonies of marriage, — and the establishment of public worship, were, as we imagine, the first objects which employed the thoughts of legislators.

The origin of the rights of property are as ancient as the origin of societies. As soon as families united, the distinction
of

of MEUM and TUUM took place. But these rights of property were very indeterminate, and ill understood, till after the establishment of political government. It then became necessary to introduce a certain order, and a certain regularity, into the affairs of society. This was provided for by regulations for securing to every man the peaceable enjoyment of his possessions. These different regulations gave birth to civil law. But, as I have already said, the civil code of the first societies must have lain in narrow bounds. Destitute of the greatest part of the arts, they had no possessions but their cattle, some furniture, and some few utensils of indispensable use. Being unacquainted with the principal objects for which civil laws were instituted, they had no need of many formalities to confirm their engagements and terminate their disputes.

If we have sufficient reason for saying that the first political societies had but few civil laws, we have still better reason to affirm that the case was very different with regard to penal laws. The establishment of these laws was absolutely necessary to restrain individuals from resuming the exercise of their natural rights.

Unhappily all men are not alike inclined to honesty and virtue. The design of political society is to secure the tranquillity of all its members. In order to this, it was necessary to take measures for suppressing all attempts to disturb the public peace. Experience has discovered, that the support of society depends entirely on the COERCIVE POWER, which by exemplary punishments intimidates the wicked, and balances the allurements of pleasure, and the strength of the passions. Hence the necessity and the establishment of penal laws. From what yet remains of the laws of the most ancient nations, we may remark, that they chiefly relate to crimes, and such crimes as are most common among a barbarous people; as theft, murder, rapes, rapine, in a words, all kind of wrongs committed by violence *.

It is not possible to give any very particular account of the several species and qualities of the most ancient penal laws. The law of retaliation is, in this kind, the most ancient of all those

* See l'hist. du droit Franc. dans vol. 1. de l'institut. au droit Franc. attribué à Argou.

which have been established. It is founded on the purest and most natural equity. The *lex talionis*, was very strictly observed by the Israelites ^z. I am persuaded Moses in this only conformed to the practice of the primitive times. The savages to this day follow with great exactness the law of retaliation ^a. It was authorised also by the legislators of Greece and Rome ^b. It is true, that, in many circumstances, the execution of this law might have its inconveniencies, and even some impossibilities. For this reason, particular punishments, and even compensations were afterwards invented, by way of reparation to the party injured. We find some examples of this among the Israelites ^c; and we shall meet with more when we come to treat of the ancient laws of Greece ^d.

In general, we may conclude, that the ancient penal laws were very severe. We see in very early times, Tamar condemned to be burnt for adultery ^e. We find the same severity in the Egyptian laws, which we shall speak of by and by. Those of China are another proof of this ^f. The same may be said of the laws of Moses. Blasphemy ^g, idolatry ^h, profaning the sabbath ⁱ, witchcraft ^k, homicide ^l, adultery ^m, incest ⁿ, rapes ^o, crimes against nature ^p, smiting or cursing father or mother ^q, were punished with death, nay with the most cruel kinds of death ^r. It was said too of the laws of Draco one of the first legislators of Athens, that they were written with blood ^s. The laws of the twelve tables among the Romans were full of very cruel institutions. We find there the punishment of burning; theft punished with death, &c. and almost

^z Exod. c. 21. v. 23. 24. 25.

^a Voy. de Coreal. t. 1. p. 208.; Voy de J. de Lery, p. 272.; Hist. gen. des voy. t. 4. p. 324. 325.

^b Paus. l. 1. c. 28. p. 70.; A. Gel. l. 20. c. 1. p. 863.; Calmet, comment. t. 2. p. 291.

^c Exod. c. 21. v. 22. 30. c. 22. v. 3. 6. ^d Part 2. b. 1. c. 3. art. 8.

^e Gen. c. 38. v. 24. ^f Hist. gen. des voy. t. 6. p. 234. & seq.

^g Levit. c. 24. v. 11. &c. ^h Exod. c. 22. v. 20.; Levit. c. 19. v. 4.

ⁱ Num. c. 15. v. 32. & seq.; Exod. c. 31. v. 14. 15.

^k Exod. c. 22. v. 18.; Levit. c. 20. v. 27.

^l Exod. c. 21. v. 12.; Levit. c. 24. v. 17.

^m Levit. c. 20. v. 10. ⁿ Ibid. v. 12. 14. 17.

^o Deut. c. 22. v. 25.

^p Levit. c. 18. v. 21. 23. 29. c. 20. v. 13. 15. 16.

^q Exod. c. 21. v. 15. 17.; Levit. c. 20. v. 9.

^r Burning, stoning, &c. See F. Calmet, t. 2. p. 280. 281.

^s Plut. in Solone, p. 87. F.

always capital punishments[†]. Amongst the Gauls, criminals were burnt alive in honour of the gods[‡].

Laws ought not only to protect the lives and promote the peace of the members of society in general, they ought also to consult the happiness of individuals, to provide for their subsistence, to prevent occasions of discord, to form their hearts and minds by inspiring them with such sentiments as may promote the harmony and peace of families. I remark in all civilised nations, two things which may be considered as the great foundation and support of political society. The first of these is, the ceremonies which accompany the union of a man with a woman, which fix and regulate the ties of marriage and the state of children; the second, the ceremonies of public worship solemnly paid to the Deity. These two have been found, by legislators, the wisest and most effectual means for the support and good government of states.

The mutual inclination of the two sexes towards each other, is the principle which continues and perpetuates society. But this inclination, if it is not kept within certain bounds, is the source of many evils. Before the establishment of political society, the two sexes in their commerce obeyed no other dictates but those of brutal appetite. Women belonged to the man who seized them first[§]. They afterwards became the property of any one who had the address to seduce them, or the strength to carry them off. The children who sprung from this irregular intercourse, scarce ever knew who were their fathers. They knew only their mothers, for which reason they always bore their name^{||}. Besides, no person taking any care to bring them up, they were often exposed to perish.

Such disorder must have been extremely hurtful. It was

[†] See l'hist. de la jurisprud. Rom. p. 143. [‡] Caes. de Bel. Gal. l. 6. c. 15.

[§] *Quos venerem incertam rapientes more ferarum,
Viribus editior, caedebat, ut in grege taurus.*

Hor. l. 1. sat. 3. v. 109.

^{||} Sanch. ap. Euf. p. 34. D.; Varro ap. Aug. de civit. Dei l. 18. c. 9.; Nicol. Damasc. verb. Γαλακτοφάγοι and Λύκιοι ap. Vales. excerpt. p. 510. 517.; Solin. c. 30. init. p. 55.

The traces of the primitive customs remained long in some ancient nations. See Herod. l. 1. n. 173. Herac. Pont. de polit. verbo Λυκίων.; Apol. Rod. Argon. l. 1, v. 229. &c.

a matter of the greatest consequence to introduce regularity and tranquillity into the commerce of the sexes, and to provide for the maintenance and education of children. This desirable end could not be obtained but by subjecting the union of the sexes to certain restrictions. The laws of marriage have bridled the most unruly of passions. They have done more; by pointing out the degrees of consanguinity which render some alliances unlawful, they have taught men to know and to respect the rights of nature. These laws, in a word, by ascertaining the rights of children, have secured a succession of subjects to the state, and given a regular and settled form to society. No kind of laws have contributed more than these to preserve peace and harmony amongst mankind.

The institution of the laws and rules of marriage is very ancient. The scriptures furnish us with several examples of the high regard paid in the first ages to an establishment so necessary to the peace and preservation of society ^a.

Profane history equally confirms this truth. All the most ancient traditions agree in ascribing the regulations concerning the union of the sexes to the first sovereigns. Menes, esteemed the first king of the Egyptians, established the law of marriage amongst that people ^b. The Chinese give the honour of this institution to Fo-hi their first sovereign ^c. The Greeks allow that they owed this salutary establishment to Cecrops ^d, their first legislator ^e. Fable whose origin is traced back to the earliest times, gives us no instance of any man's having more than one wife of right. Jupiter, Osiris, Pluto, &c. had each but one lawful wife. The Cretans pretended to know the place where the nuptials of Jupiter and Juno had been solemnized. They celebrated yearly their anniversary, by a faithful representation of those ceremonies, which, as they had learned from tradition, had been observed on that occasion ^f.

We see too by the laws of all civilized nations, how much

^a *Concubitu prohibere vago, dare jura maritis.* Hor. de art. poet. v. 398.

^b Gen. c. 12. v. 19. c. 20. v. 9. c. 26. v. 10.

^c Diod. l. 1. p. 17. Palaeph. ap. Ch. Alex. p. 45. D; Cedren. p. 19.; Suid. voce

^d *Ἡφαίστος* t. 2. p. 85.

^e Extr. des hist. Ch.; Let. ed. t. 26. p. 65. Martin. hist. de la Chin. l. 1. p. 31.

^f See part. 2. c. 3. art. 1.

^g Ibid.

^h Diod. hist. l. 5. p. 388.

legislators

legislators have had at heart the encouragement of marriage. Moses decreed that a new married man should be exempted from going to war, and from every public charge, for one year ^c. Those who married amongst the Peruvians, were freed from all taxes the first year of their marriage ^d.

Ancient legislators carried their views still farther. In order to strengthen the ties of marriage, and to render that union still more sacred, they decreed very severe punishments to such as should attempt to violate the rights or disturb the harmony of the matrimonial state. In all ages and amongst all civilized nations adultery has been prosecuted ^e. Legislators were too much enlightened not to perceive how destructive that crime was to the peace, the order, and interests of society. They regarded rapes and robberies in the same light ^f. They believed they could not use too many precautions to restrain a passion, whose consequences would have infallibly occasioned the total ruin of society. Let us now proceed to consider the institution of religious ceremonies.

The establishment of a solemn and public worship has without doubt contributed most of all to civilize mankind, and to support and strengthen societies. The existence of a supreme being, sovereign judge of all things, and absolute master of all events, is one of the first truths which affects the mind of an intelligent creature, who is willing to make use of his reason. From this heart-felt sentiment arises the natural idea of having recourse in calamities to that almighty being, of invoking him in pressing dangers, and of endeavouring to obtain the favour and protection of this omnipotent sovereign of the universe, by external expressions of submission and respect. Religion then is prior to the establishment of civil society, and independent of all human conventions.

But depravity of heart, blindness of mind, and especially superstition, have too often darkened and perverted those ideas that men ought to have of the Deity; they have more than

^c Deut. c. 24. v. 5.

^d Hist. des Incas, t. 2. p. 100.

^e Gen. c. 38. v. 24. Levit. c. 20. v. 10. Job c. 31. v. 10. 11.; Diod. l. 1. p. 89. 90.; *Ælian*. var. hist. l. 13. c. 24. *Mar. hist. de la Chin.* l. 1. p. 31. *Accost.* nat. des Ind. l. 6. c. 18.; *Conq. du Mexiq.* t. 1. p. 564.

^f Deut. c. 22. v. 25.; Diod. l. 1. p. 89.; *Hist. des Inc.* t. 1. p. 242.

once indiscriminately led them to other beings, who they foolishly fancied could protect them, and to whom of consequence they paid religious worship. As soon as several families had submitted to one form of political government, they found it would be very dangerous and inconvenient, to permit every particular person to chuse according to his own fancy the form and object of his worship. They endeavoured therefore to unite all the members of the society in one fixed and uniform mode of public worship. "No particular person," say the Roman laws, "shall have any new or strange gods, or worship them even in secret, unless the worship of them has been permitted by public authority¹." This principle has been acknowledged by all civilized nations, they saw very clearly that it was impossible for society to subsist without some form of public worship. Into whatever country we transport ourselves, we shall every where meet with altars, sacrifices, festivals, religious ceremonies, priests, temples, or places solemnly and publicly consecrated to the Deity*.

We learn from the remains of ancient history, that the first sovereigns instituted the ceremonies of religion, and regulated the public worship in each state^m. We even see, that originally, and for a long time after, the two offices of king and priest were united in one person. The holy scripture saith itⁿ. Homer also, and other ancient authors affirm this very clearly.

¹ Cicero de leg. l. 2. n. 8.

* The most general rules and propositions may have some exceptions. I shall be told perhaps that both ancient and modern authors mention some nations who have no signs of public worship.

But it must be remarked, That these nations are very few, not above five or six at most, both in the old and new world. 2. They are neither large nor populous. Now, I ask, if the practice of so small a number of men, compared with the whole human race, can destroy the general maxim, That society cannot subsist without an exterior form of religion, a maxim whose truth is confirmed by the practice and example of all nations savage or civilized. Besides, is the fact very certain, that there were or now are, nations entirely without religion? Have the writers or travellers quoted for this purpose dwelt long enough amongst these people, to know with certainty they had no sort of worship?

^m Diod. l. 1. p. 18. 19.; Hygin. fab. 143.; Dion. Hal. l. 2. p. 87. 90.; Tacit. Ann. l. 3. n. 26.; Plut. t. 2. p. 356. A. p. 125. D.; Stob. eclog. phys. l. 1. p. 124. Hist. des Incas, l. 1. c. 21. p. 67.

ⁿ Gen. c. 14. v. 18. 1 Reg. c. 13. v. 9. 2 Reg. c. 6. v. 13. 18. 20. c. 24. v. 25.

^o Herod. l. 6. n. 56.; Plat. in Polit. p. 350. B.; Xenoph. Cyrop. l. 3. p. 63. De rep. Laced. p. 544.; Demosth. in Neaeram, p. 873. B.; Cicero de divinat. l. 1. n. 4.

It were unnecessary to insist further upon this point. Let us rather speak a few words of certain particular customs which sprung from the establishment of these first positive laws.

The institution of the rights of property, and the laws of marriage, necessarily introduced certain customs and usages which may be regarded as the foundation and origin of all civil laws. In strictness I should not speak of these till I come to the article of those laws. However, as these usages are a natural consequence of political laws, as they prevail in all formed societies, and preceded civil laws, which were designed to regulate them; that we may follow the footsteps of those institutions which one after another brought the body-politic to a state of perfection, it is proper to speak of them in this place. These particular customs are such as were originally observed in matrimonial contracts, — successions, — making and ascertaining agreements and obligations, — and, in a word, pronouncing and attesting judicial sentences.

Custom will now have it, that a wife shall bring a certain portion to the husband of which he is to be the usufructuary during the marriage. It was quite the contrary in the most ancient times. The husband was obliged in some sort to purchase his wife, either by services performed to her father, or presents made to herself. Abraham charges Eliezer with several magnificent presents when he sends him to demand Rebecca for Isaac^p. Jacob served Laban seven years to obtain Rachel^q. Sechem demanding Dinah the daughter of Jacob, says to the sons of this patriarch, “Ask me never so much dowery and gift, and I will give according as ye shall say unto me;” “but give me the damsel to wife^r.” This custom subsisted a long time in many countries. Homer speaks of it^s. It was in use amongst the ancient inhabitants of India^t, Greece^u, Spain^x,

n. 40.; Virgil. *Æneid.* l. 3. v. 80.; Diod. l. 2. p. 159.; Dion. Halicarn. l. 2. p. 87. l. 4. p. 269.; Titus Livius, l. 2. n. 2.; Servius ad *Æneid.* l. 3. v. 80.; Martini hist. de la Chine, t. 1. p. 59. 89.; Mem. du P. le Comte, t. 2. lettre 9. p. 16.; Hist. des Incas, t. 2. p. 48.; Lettres édif. t. 19. p. 387. 483.; Hist. du Japon par Kaempfer, præf. p. 30. l. 1. p. 99. l. 2. c. 1. p. 228. t. 2. 3. *init.*

^p Gen. c. 24. v. 10. --- 53. ^q Gen. c. 29. v. 18. & seq.

^r Gen. c. 34. v. 12.

^s We shall speak of it in part 2. b. 1. in the article, Of Greece.

^t Strabo, l. 15. p. 1036. ^u See part 2. b. 1. c. 3. art. 8.

^x Strabo, l. 3. p. 251.

Germany ^γ, Thrace ^z, Gaul ^α. At this day the people of China ^β, Tartary ^ε, Tonquin ^δ, Pegu ^ς, Turkey ^τ, Transilvania ^κ, the Moors of Africa ^η, and the savages ^ι, buy their wives.

The division of successions is a matter of great importance in society ; of greatest moment indeed to people who cultivate the ground, but still of some consequence to all. Accordingly we find some regulations made in this matter in the remotest ages ^κ. Fathers seem then to have had the absolute power of disposing of their effects. The children which Abraham had by his other wives besides Sarah, had no share in his succession. He excluded them, and gave the whole to Isaac. That patriarch contented himself with giving some gifts to his other children in his lifetime ^λ. Jacob bestowed on Joseph above his brethren, all the land he had conquered from the Amorites ^μ. The author of the book of Job observes, that that holy man gave his daughters an equal share with his sons in his inheritance ^ν.

There were, however, even at that time, some prerogatives annexed to seniority. The history of Jacob and Esau affords sufficient proof of this ^ο. The rights of seniority also furnished Laban with an excuse for his imposing upon Jacob, by substituting Leah in the place of Rachel whom he had promised him ^π. The best writers of antiquity inform us, that,

^γ Tacit. de morib. Germ. c. 18.

^z Heraclid. Pont. de polit. voce *ἑρμηνεύω*.

^α See La loi Salique, art. 46. & les formules de Marculphe.

^β Hist. gén. des voyag. t. 6. p. 144. 145. ; Lettr. édif. t. 14. p. 145.

^ς Marc Paul, l. 1. c. 49. 55. ; Hist. gén. des voyag. t. 7. p. 230.

^δ Voyag. de Dampier, t. 3. p. 55.

^ε Rec. des voyages de la compagnie des Ind. Holland. t. 3. p. 73. ; Voyag. d'Ovington, t. 2. p. 297. ; Lettr. édif. t. 25. p. 463.

^τ Hist. gén. des voyag. t. 2. p. 629. ; Ibid. t. 4. p. 590.

^κ Observat. de Belon, l. 3. c. 17. ; Voyag. de la Boulaye, p. 411.

^η Casaub. in not. ad Strab. p. 251. (5.)

^ι Mœurs des sauvages, t. 1. p. 565. ; Rec. des voyag. au Nord, t. 5. p. 17. ; Voyag. de Frezier, p. 66. ; Lettr. édif. t. 20. p. 123.

^λ See Gen. c. 48. v. 6. ^μ Gen. c. 25. v. 5. & 6. See Calmet *loco cit.*

^ν Gen. c. 48. v. 22.

^ο Job c. 42. v. 15. See le comment. du P. Calmet.

^π See Gen. c. 49. v. 3.

^ρ Gen. c. 29. v. 26.

by the universal custom of all civilized nations, the eldest son had authority over his brothers ¹.

The invention of certain usages and means of attesting and authenticating the principal transactions of civil life, may be reckoned amongst the most ancient political institutions.

It has been found necessary in all ages, that the more important affairs of society, such as, bonds of mutual obligation, sales, marriages, sentences of judges, the quality and property of the citizens, &c. should have a certain degree of notoriety, in order to secure their execution and authenticity. To this end, certain forms have been settled for drawing these sorts of deeds, certain persons authorised to receive them, public repositories erected to preserve them, that they might be consulted upon occasion. For all civil society depends upon the security of those engagements which the members of it enter into with each other.

It was a long time before mankind found out the art of painting words, and rendering them permanent and durable *. All deeds were then verbal, yet still it was necessary to authenticate and ascertain them. The method then used was to transact them in public and before witnesses ¹. When Abraham bought a cave of Ephron to bury Sarah, the purchase was made in presence of all the people ². Homer, in his description of the shield of Achilles, represents two citizens pleading concerning the mulct due for a homicide. The cause is tried in public. He who had slain the man maintains that he had paid the mulct. The relation of the dead declared that he had not received it, and both of them, says the poet, appealed to the deposition of witnesses for determining their dispute ³. There are some nations at this day, who, not having any kind of writing, make use of the like methods for authenticating their deeds and contracts ⁴.

¹ Iliad. l. 15. v. 165.; Herod. l. 7. n. 2.

* See what is said of the origin of writing, *infra*, b. 2. c. 6.

² Hom. Iliad, l. 18. v. 499. &c.; Dion. Halicarn. l. 2. p. 134.; Syncell. p. 102.

³ Gen. c. 23. ⁴ Iliad. l. 18. v. 499. &c.

⁴ Hist. gén. des voyag. t. 3. p. 407.

Perhaps also they supplied their want of writing by other inventions. We know of some nations whose conduct gives us an idea of the usages which probably prevailed in ancient times. These nations confirmed their sales, purchases, loans, &c. by certain pieces of wood cut in tallies. They cut them in two; the creditor keeps one, the debtor the other. When the debt or promise is discharged, each gives up his piece of wood^x. Considering their way of life in these remote ages, their contracts could not have many clauses, and such methods would be sufficient to authenticate all their deeds.

The place of dispensing justice was originally at the gates of cities, that is to say, in presence of all the people. Such was the practice in the days of Job^y. Moses also makes mention of this ancient custom^z, which, according to Homer subsisted, in the heroic ages^a. This practice was owing to their ignorance of the art of writing. They had no other means of authenticating their securities, but by pronouncing them in public. Besides, as civil laws were hardly known in these ages, their trials were very short and summary. The whole depended on the deposition of witnesses^b; they heard these, and pronounced accordingly. This manner of dispensing justice is still observed in several countries^c.

Let us mention on this occasion the methods anciently used in promulgating and ascertaining laws.

I have remarked already, that it was long before mankind knew the art of writing; but they very early invented several methods, to supply, in a good measure, that want. The method most commonly used was, to compose their histories in verse, and sing them. Legislators made use of this expedient to consign and hand down to posterity their regulations. The first laws of all nations were composed in verse, and sung^d. Apollo, according to a very ancient tradition, was one of the first legislators^e. The same tradition says, that he published his laws to the sound of his lyre^f, that is to say, that he had set them to music. We have certain proof that the

^x Hist. gén. des voyag. t. 7. p. 334.; Marco Polo, l. 2. c. 41. See also Le rec. des voyag. au Nord, t. 8. p. 402.

^y C. 9. v. 7.

^z Gen. c. 23. v. 18.

^a Iliad. l. 18. v. 497. & seq.

^b Ib. v. 501.

^c Hist. gén. des voyag. t. 5. p. 8.

^d Plato in Min. p. 567. B.; Arist. problem. § 19. problem. 28.

^e Strabo, l. 9. p. 646.; Suid. voce Νόμοι κιθαρις. t. 2. p. 630.

Suid. ibid.

first laws of Greece were a kind of songs: The laws of the ancient inhabitants of Spain were verses, which they sung^a. Tuiston was regarded by the Germans as their first lawgiver. They said, he put his laws into verses and songsⁱ. This ancient custom was long kept up by several nations^k.

It was not enough to make laws; it was also necessary to provide for their execution, and take proper measures for terminating all disputes which might arise amongst the citizens. The administration of justice is the foundation and support of society. In the first ages every father of a family was the natural judge of the disputes which arose among his children. But when many families were united, it became necessary, in order to decide the contests which arose between family and family, to chuse one common judge who should at the same time have sufficient impartiality to make a just application of the law, and sufficient power to enforce its execution. Political government hath provided such an arbiter, possessed of supreme authority over all the members of the state.

In states where the government was intrusted in the hands of one chief, that chief at first distributed justice in person. Monarchs executed this important office, as long as the number of their subjects was not considerable; but when these became too numerous, it was found necessary to chuse certain persons of known probity and wisdom, to whom the sovereign committed a share of his authority, to dispense justice to his subjects. The holy scriptures countenance the conjecture we have now proposed concerning the origin of judges. We see Moses oppressed with the multiplicity of affairs, chose a certain number of wise men to dispense justice to the people. These judges terminated of themselves common and ordinary matters; but were obliged to give an account to Moses of things of greater moment^l.

The respect which has been paid, in all ages and countries, to the ministers of religion, was the reason that the administration of justice was originally committed to them. The

^a See part 2. b. 1. c. 3. art. 8. ^b Strabo, l. 3. p. 224.

ⁱ See Kuhnius ad Ælian. var. hist. l. 2. c. 39. note 1.

^k Arist. problem. § 19. probl. 28.; Ælian. var. hist. l. 2. c. 39. See also part 2.

^l c. 3. art. 8.

^l Exod. c. 18.

most ancient nations mentioned in history, knew no other judges but their priests. These were arbiters in the most important affairs, finally determined all disputes, and inflicted such punishments as they thought proper^m. The authority which religion naturally gave to priests, was not perhaps the only motive which at first determined mankind to make choice of them to be the arbiters of all their disputes, and judges of all their crimes. The high opinion which men have always had of their abilities and wisdom, no doubt, contributed to this choice. However this may be, this ancient custom of committing the dispensation of justice to the ministers of religion, is not quite abolished to this day. We hear of several nations where it still subsistsⁿ.

A R T I C L E II.

Of the second rank of positive laws, that is to say, of civil laws.

WHat we have hitherto said of the origin and establishment of laws, is alike applicable to every kind of political society. Let us now proceed to consider those laws which owe their establishment and origin only to nations who applied to agriculture. This second class of laws is very near the first in date, and in the necessity of its establishment. Agriculture, by giving rise to arts and to commerce, by a necessary consequence very soon gave birth to civil law; and agriculture was known to many nations in very ancient times. I shall produce the proofs of this in the next book. The only point we have under consideration at present, is the effects of agriculture on government and laws.

The culture of the earth requires great care and great labour. The nations which embraced this way of life, were obliged to have recourse to industry for the succours they stood

^m See le comment. du P. Calmet, t. 2. p. 430. t. 3. p. 5. & 659.; Caesar de bello Gall. l. 6. c. 13.; Dion. Halicarn. l. 2. p. 132.; Strabo, l. 4. p. 302. l. 1. p. 43.; Tacit. de morib. Germ. c. 7. & 11.; Ælian. var. hist. l. 14. c. 34. See Perizonius's notes, *loco cit.*

ⁿ Voyage de Pyrard, c. 14. p. 144. 145.; Hist. gén. des voyag. t. 4. p. 396.; Rec. des voyag. au Nord, t. 8. p. 403.; Chardin, t. 6. p. 16.

in need of. These inquiries gave birth to many arts, these arts produced commerce, commerce multiplied and diversified the interests of the different members of society. There was a necessity for regulations on all these subjects. It is thus agriculture, by its dependencies, gave occasion to the establishment of a great number of laws. These laws necessary to govern a people who cultivate the ground, compose the body of civil jurisprudence.

The first law such a people would establish, would be one for assigning and securing to each family a certain portion of ground. When husbandry was unknown, all lands were common. There were no boundaries nor land-marks *; every one sought his subsistence where he thought fit †. By turns they abandoned, and repossessed the same districts, as they were more or less exhausted. But after agriculture was introduced, this was not practicable. It was necessary then to distinguish possessions, and to take necessary measures, that every member of society might enjoy the fruits of his labours. It was highly reasonable that he who had sowed should reap, and not see another seize the profits of his toil and care. Hence, the laws concerning the property of lands, the manner of dividing and possessing them. These objects have always very much employed the thoughts of legislators. Homer informs us, that, in these remote ages, it was one of the first cares of those who formed new establishments, to divide the lands amongst the members of the colony †. The Chinese say, that Gin-hoand, one of their first sovereigns, divided the whole lands of his empire into nine parts; one was destined for dwellings, and the other eight for agriculture †. We see also by the history of Peru, that their first Incas took great pains, in dividing and distributing the lands amongst their subjects †.

It was not enough to establish and regulate the division of lands, it was also necessary to suppress and prevent usurpations. Ancient legislators took all possible precautions for

* ----- *Non fixus in agris.*

Qui reget certis finibus, arva lapis. Tibul. l. 1. eleg. 3. v. 43.

† *In medium quaerebant.* Virgil. Georg. l. 1. v. 127.

• Odyss. l. 6. v. 10. † Martini hist. de la Chine, l. 1. p. 18.

† Acosta hist. des Ind. Occident. fol. 295. 296.; Hist. des Incas, t. 1. p. 48. 188.

this purpose. With a view to restrain avidity, and obviate all contention, they obliged every person to fix the boundaries of his grounds by land-marks, either such as nature had set up, or others of the most solid and durable materials. This practice is very ancient. We find it alluded to very plainly in Genesis ^r. It was also practised in the days of Job. He puts those who remove land-marks at the head of his list of wicked men ^r. Moses expressly forbids the Israelites to do this; and from the words he uses, it appears, the use of land-marks was known long before his time ^r. Profane authors represent this practice as no less ancient. Homer speaks of it as a custom of the highest antiquity ^u. Virgil refers the institution of it to the age of Jupiter ^x, that is to say, to the most remote times. Legislators decreed very severe punishments to those who removed land-marks. Numa ordered this crime to be punished with death ^y. Politicians interested religion in a matter of so much moment to society, that such as the laws of men could not restrain might be overawed by the fear of the gods ^z.

Agriculture then gave rise to the holding lands in property; but this property must necessarily change at the death of each possessor. The toil and labour which the cultivation of land requires, gave men a strong attachment to what cost them so much fatigue. Hence the desire of transmitting the possession and enjoyment of it to those they held most dear. It became necessary, therefore, to establish laws and regulations concerning the manner of disposing of inheritances, either when a man left several children, when he left no posterity, or when he had a mind to dispose of it in a particular manner. Thus the division of lands gave rise to rights and to jurisprudence ^a.

^r C. 49. v. 14. ^r C. 24. v. 2.

^t *Non assumes et transferes terminos proximi tui, quos fixerunt priores in possessione tua.* Deut. c. 19. v. 14. ^u Iliad. l. 12. v. 421. l. 21. v. 405.

^x *Ante Jovem* -----

Nec signare quidem aut partiri limite campum fas erat. Georg. l. 1. v. 125.

^y Dion. Halicarn. l. 2. p. 133; Festus, voce *termino*, l. 18. p. 586.

^z See les mém. de l'acad des inscript. t. 1. m. p. 50.; Plato de leg. l. 8. p. 914.

^a *Itaque ex agrorum divisione inventa sunt jura.* Macrobi. Saturnal. l. 3. c. 12, p. 413.

The laws relating to that matter make up a principal part of the civil code.

We should never have done, if we were to enumerate all the laws which agriculture has occasioned. It suffices to say once for all, that we must never lose sight of the discovery of that art, and those which depend upon it, when we desire to discover the origin of civil law. Further, it is not possible to give any clear account of the first civil laws of the most ancient nations. We have not a sufficient number of facts or particulars of the history of these remote ages. What may be affirmed with most probability, is, that civil law at first was very imperfect. Jurisprudence was not formed into any regular system but by a long course of time. No one legislator could foresee all events. Uncommon cases and new circumstances gave occasion to the establishment of the greatest part of civil constitutions. Whenever a new case arose, a new law was made.

Agriculture, as I have said already, gave birth to the greatest part of arts, arts produced commerce, and commerce necessarily occasioned a great number of regulations: it even became necessary, in succeeding times, to extend or reform these regulations in proportion as commerce grew more extensive; as industry advanced to perfection, as commodities were represented by new signs, as new discoveries were made, and as abundance introduced luxury and magnificence.

It was long before men found out metals, and the manner of working them; but when this discovery was made, it produced many new arts, and greatly advanced those which had been known before. These were often sources of new laws. The introduction of these same metals into commerce as a common price of all commodities, necessarily occasioned new regulations, and new ordinances. Acquisitions and obligations are the natural consequences of commerce and of industry, and of the administration and of the circulation of money. Hence the origin of certain forms for drawing and attesting deeds, by which the members of society bound and obliged themselves to each other. Hence the necessary establishment of public officers, charged with the care of receiving and registering these deeds.

Add to this, that wars have very often changed the face of empires. Conquests have introduced new notions of things, new manners, new designs, and even new arts. Of consequence, the political system of states must have varied very often according to the different circumstances and various positions of the people; and the legislature was necessarily affected with all these variations.

Besides, nothing but length of time could discover the abuses and inconveniencies attending certain laws. These laws must have been mended or repealed, and others substituted in their room. The writers who alone could at this day instruct us in the jurisprudence of the ancients, could not possibly have an exact knowledge of these matters. They knew nothing of the nations they speak of, till long after the times we are examining, and then the civil code of these nations acquired a fixed and settled form. The historians of antiquity could not speak with certainty of any laws but such as were in force in the times in which they writ. Now, though the epocha of many of these ancient laws is unknown to us, we ought not to presume that all those whose authors we are unacquainted with, were the works of the first legislators. We may observe further, that the greatest part of the writers of antiquity, in general, take very little notice of the jurisprudence and civil laws of ancient nations.

Let us not then fatigue ourselves in searching what were the first civil laws. Let it suffice, that we know that all those which in process of time formed the civil code of nations, flowed either directly or indirectly from agriculture. History, independent of all reflections, attests this in the most solemn manner. Let us run through the annals of all civilized nations; there we shall see, that civil laws took rise at the same time with agriculture, and that one and the other establishment was the work of the first sovereigns. The Egyptians extolled the great services Osiris had done to mankind by the discovery of agriculture, and the establishment of his laws ^b. The Greeks said the same of Ceres ^c; the first people of Italy, of Saturn ^d; the ancient inhabitants of Spain,

^b Diod. l. 1. p. 17. 18.

^c See part 2. l. 1. c. 3. art. 1.

^d Arist. polit. l. 7. c. 10.; Macrob. Saturn. l. 1. c. 7. p. 217.

of Habis^e; the Peruvians, of Manco-Capac^f; the Chinese pay the same honour to Yao^g.

Let us remark by the by, how essentially necessary ancient legislators esteemed agriculture to the support of society. We may judge of this, by the great pains they took to preserve the enjoyment of it to their subjects. It is not possible to cultivate the ground without the assistance of animals. For fear the species of animals employed in labour should fail, ancient laws forbade the killing any of these creatures on pain of death: this was one of the ancient laws of Greece^h, a law observed by many other nationsⁱ. The great respect of the ancients for the ox, so useful in tillage, is attested by all the writers of antiquity. To kill an ox was a capital crime^k. Even at this day, in some countries, the same regard is paid to this animal, which renders such great services to mankind. By the laws of Ram, so much regarded in the Greater India, it is expressly forbidden to kill oxen^l. At Madura this is a crime punished with death^m. In Syria they never eat beef, much less veal; they preserve the cattle to till the earthⁿ. In one of the French islands of America, they formerly forbade killing of oxen on pain of death, to encourage the breed of these animals^o. It is probable, that it was for the same political reason that ancient legislators made laws to the same purpose^p. Oxen were the only animals that were anciently employed in agriculture.

This conduct appears to me to have included another motive besides that of securing cattle for husbandry. The first legislators had men to govern, ferocious and only just emerged

^e Justin. l. 44. c. 4. p. 745.

^f Hist. des Incas, t. 1. p. 21. 31.

^g Acad. des inscript. t. 10. p. 391.

^h We shall speak of it in part 2.

ⁱ Nicol. Damasc. apud Stob. serm. 42. p. 293.; Ælian. hist. animal. l. 12. c. 34.; Varro de re rust. l. 2. c. 5.; Plin. l. 8. c. 45. p. 472.; Porphy. de abst. l. 2. p. 138.

^k *Ab hoc antiqui*, says Varro, *manus ita abstinere voluerunt, ut capite sanxerint, si quis occidisset.* De re rust. l. 2. c. 5. See also Aratus, phœnom. v. 132.; Virg. georg. l. 2. v. 537.; Columell. l. 6. in proœm. p. 209; Plin. l. 8. c. 45. p. 472.

^l Voyage de la Boulaye, p. 157.

^m Lettres édif. t. 12. p. 93.

ⁿ Hieron. in Jovinian. l. 2. c. 6.; Mercure de France, Févr. 1727, p. 221.

^o Lettres édif. t. 12. p. 93.

^p Athen. l. 9. p. 375.

from barbarism. I do not doubt therefore, but those legislators had a view of inspiring their people with gentleness and compassion towards each other, by inspiring them with these sentiments towards animals. We find several laws amongst the Israelites which seem to have been dictated from this motive. God in commanding to rest on the seventh day, declares his intention to be, to give some relaxation to slaves and beasts of labour ¹. He forbids maiming of animals, or muzzling the ox that treaded out the corn ². If an Israelite found a bird sitting upon eggs or young, he was commanded to let the dam go ³. Moses is not the only legislator who has commanded the mild treatment of animals. We find examples of this kind in the laws of many other nations ⁴.

One of the most sensible and obvious effects of agriculture, is, that those people who applied themselves to it, were obliged to settle in a particular district. It has forced them to build houses of solid materials, and near to each other, that they might be better enabled to give mutual assistance. It is thus that cities were formed. The first mentioned in history began in Chaldea, China, and Egypt, where the people had applied to agriculture from time immemorial. According to the best writers, the study of politics began with the building of cities ⁵; and the foundation of cities gave birth to great empires. Accordingly we see that those people who understood husbandry, formed the first great and powerful states. The Babylonian, Assyrian, and Chinese empires arose in those parts of Asia where the cultivation of the soil had always been the chief occupation of the people. Egypt is at least as striking an example of it, to say nothing of the Greeks and Romans, to whom we may with good reason join the Mexicans and Peruvians in the new world. All these nations, by their skill in agriculture, were enabled to unite in considerable bodies in one place. They had the certain means of subsisting. Hunting, fishing, and the fruits of the

¹ Exod. c. 23. v. 12.

² Lev. c. 22. v. 24.

³ Deut. c. 22. v. 6. 7.; Exod. c. 23. v. 9. See le comment. du P. Calmet, t. 1. p. 219. 221. 225. 226. t. 3. p. 429.

⁴ See upon this subject a very remarkable law of an emperor of Japan. Apud Kaemp. hist. du Japon, t. 1. p. 264. See also part 2. l. 1. art. 8.

⁵ Plato de leg. l. 3. & 6.

earth which grow spontaneously, cannot maintain a great number in little bounds. The nations therefore who have no other means of subsisting but these, were forced to roam from place to place; they could never assemble in very great numbers, because no country could then afford them subsistence. Besides, these resources are casual, and might often fail them. Agriculture alone can at once support a great number in one place, and enable them to lay up provisions for the time to come. It is to the discovery and practice of this happy art we are indebted for all the sweets of life.

Let us finish this important subject with a few reflections on the unspeakable advantages mankind derive from the establishment of societies. When we reflect how difficult it must have been to establish, regulate, and support the body-politic, we cannot help regarding the laws as the masterpiece of human genius. But these, however excellent, would not have been sufficient to secure the tranquillity and happiness of mankind. The political art has employed an engine still more powerful and more extensive; it is perhaps of all the happy effects resulting from the union of families, that which mankind have felt the most sensibly, and from which they yet draw the most frequent advantages. I am speaking of those two grand springs of human actions, of those salutary prejudices which have so much force among all nations, and which often supply the place of laws, and even of virtue; *the love of glory, and the fear of shame.*

We find in all civilized countries, laws for the punishment of crimes against society; but I know of no country which has decreed rewards to the exercise of the social virtues, such as generosity, candour, humanity, disinterestedness, probity, decency of manners, &c.

I observe further, that there are certain vices, such as lying, avarice, deceit, debauchery, indecency, ingratitude, &c. for which the law has provided no punishment. I even allow that these vices are in some sort incapable of being punished by the magistrate. Yet should the social virtues remain absolutely without recompense, it were to be feared that few would be led to practise them. It were still more hurtful to society should men be permitted to abandon themselves
with

with impunity to the vices I have mentioned. Manners and customs, founded on these tacit conventions, by which all societies, as we have just said, were united, have supplied and remedied this great defect of the laws.

Honour, that sentiment so quick and delicate, is the work, the fruit of society. Public and private interest have concurred to form it. The advantage and utility which society found to result from certain sentiments, and from certain actions, led them naturally to regard these sentiments as the most precious attribute of human nature. By a necessary consequence of these same motives, they found themselves inclined to express the highest esteem and consideration for the persons possessed of these desirable qualities. The ambition of obtaining this universal favour, affection, and esteem, is a principle from which society has reaped the greatest benefits, a principle which has supplied the want of legal rewards for virtuous actions.

With respect to those actions which are pernicious to good order and public tranquillity, though no particular punishment could be decreed by law, society, upon the same principle, has equally provided that they should not remain unpunished. Custom and opinion founded on the tacit consent of all societies, have in all times pronounced a sentence of dishonour and infamy on these vices; a sentence not the less real or formidable that it was not prescribed by any particular law, or pronounced by any magistrate; and to be sensible of all the efficacy of this sentence, we need only reflect a moment on the sovereign empire of custom and opinion, and consider how great is the extent of their power.

Now, if we examine what really happens in all countries, we shall find, that though there are no express laws for rewarding the social virtues, yet those who practise them never miss their reward, never fail to attract the public affection, esteem, and admiration; rewards so much the more soothing, and so much the more powerful, as they are free and voluntary, and not the effect of any law. We see also that there are certain vicious actions which though not punished by magistrates, are from escaping with impunity; they receive a real and heavy punishment, from the scorn, contempt, and indignation of the wisest

wisest and best part of the society. These sentences, I repeat it, though they proceed not from the legislative power, though they are not invested with the authority of the law, are not the less infallible in their effect, whether by recompensing virtue, by giving those who cultivate it all the distinctions which are capable of gratifying a rational self-love, whether by punishing vice, by depriving the abandoned of the greatest comforts of society, and by the fear of restraining those mean souls who can be deterred from vitious actions only by the dread of punishment.

These are our thoughts in general concerning the establishment of political society. Let us now cast our eye on those nations most distinguished in antiquity, and observe what was their state and the form of their government in the ages which are the subject of this first part of our work.

A R T I C L E III.

Of the laws and government of the Babylonians and Assyrians.

Asia, without question, was civilized, before any other part of the world. There, Nimrod laid the foundation of the Babylonian, and Assur of the Assyrian empire, in the first ages after the flood. That of China cannot have been much less ancient. The regions at present known by the name of Persia, must have been very early civilized; for their sovereign Chedorlaomer*, in the days of Abraham, had subjected a great extent of country to his authority*. There were also at that time several states formed in Palestine, and on the banks of Jordan, which are often mentioned by Moses. The greatest part of these states, as it appears, were governed by kings. But we must satisfy ourselves with these few general hints. The history of Asia, for several ages, is almost entirely unknown to us. The sacred books, where alone we could ex-

* This prince is called in scripture, King of the Elamites. This was the most ancient name of the first inhabitants of Persia. See Bochart in Phaleg. l. 4. c. 10. p. 254.;

* Gen. c. 14.

pect any information of such remote events, leave us entirely in the dark.

Moses having told us, that Nimrod fixed the seat of his empire at Babylon ⁷, descends no lower with his narration. In the days of Abraham, we find Amraphel King of Shinar mentioned in scripture. This prince was probably one of the successors of Nimrod. But Moses mentions him only by the by, to tell us that he was one of those princes who entered into an alliance with Chedorlaomer, to assist him in subduing the kings of Palestine, who had shaken off his yoke ².

The sacred historian has observed the same silence as to the empire of Assyria; he contents himself with saying, that Assur left Babylon, and retired into that country since called Assyria, where he built Nineveh, and some other cities ³. This fact may authorise us to make this the epocha of the foundation of the Assyrian monarchy ^{*}. But Moses gives us no further light into the history of that state.

If we have recourse to profane historians, the relations they give us are so obscure, so opposite to one another, so involved in difficulties and contradictions, that it is impossible to form any certain judgment of the first events which happened in the empires of Babylon and Assyria. Modern writers have contrived several different systems for reconciling the contradictory narrations of ancient historians; but all these systems are liable to so many objections, that there is not one of them that can give us full satisfaction. But since it is necessary to chuse, I

⁷ Gen. c. 10. v. 10.

² Ib. c. 14. v. 1.

³ Ibid. c. 10. v. 11.

^{*} Bochart, followed by some other commentators, pretends that the word *Assur* here signifies the name of a province, and that the passage is to be understood, as if it had been, *de terra illa (Nimrod) egressus est in Assyriam*, &c. "Nimrod leaving the plains of Shinar, went into Assyria, where he built "Nineveh," &c. Phaleg. l. 4. c. 12. p. 259. 260.

But this opinion is opposed by many famous writers. They have shown that this explanation is inconsistent with the very words of Moses, and that we must take the word *Assur* as the Septuagint, Josephus, and the Vulgate do, for the name of one of the sons of Shem, and say, that Assur left the plains of Shinar, and formed a new establishment on the banks of the Tigris, of which Nineveh was the capital. See Perizon. orig. Babyl. c. 4. I may add, that one of the greatest masters of the oriental languages has assured me, that in the versions, Arabic, Chaldean, Syriac, Armenian, the word *Assur* is always in the nominative, and never in the accusative, as the partisans of the other opinion pretend.

I shall fix upon that which appears to me the most probable, and most agreeable to the ideas I have formed of these very ancient times.

It seems evident from the text of Moses, that Babylon was somewhat more ancient than Nineveh. It appears also that these two cities were originally the capitals of two empires, each of which was governed by a distinct monarch. These two states continued separate 440 years.

History has not transmitted to us any particulars concerning the sovereigns who reigned at Nineveh from Assur to Ninus: we know not so much as the names of these ancient monarchs ^c. The Assyrian empire, so famous in antiquity, like other early establishments, was but small in its beginnings ^d. Ninus was the first who attempted to enlarge its limits. He conquered the kingdom of Babylon, and laid the foundation of that formidable power which held Asia in subjection for so many ages ^e.

As to the Babylonians, it appears, that, after Nimrod, seven kings, Chaldeans by birth, reigned successively at Babylon ^f. After them a family of princes originally from Arabia, seized the throne. They reckon six of these, who succeeded each other without interruption ^g. Under the last of these kings, Ninus, the sovereign of Assyria, attacked and defeated the Babylonians, seized the person of their king, and by that conquest united the throne of Babylon to that of Nineveh ^h. This event happened 590 years after the flood, 1758 before the Christian æra. I shall give my reasons for this date in a few words.

I place (with the greatest number of chronologers) the foundation of the kingdom of Babylon, by Nimrod, about the year 150 after the flood. Almost all the ancient historians agree, that this kingdom had subsisted 440 years, under two distinct dynasties, or families, at the time the Assyrians

^c Diod. l. 2. *init.*; Justin. l. 1. c. 1.

^d Dion. Halicar. l. 1. c. 2.

^e Diod. Just. *supra.*; Plato de leg. l. 3. p. 809.

^f Jul. African. ap. Syncell. p. 90.

^g Id. *ibid.* & p. 92.

^h Diod. l. 2. *init.*; Jul. African. ap. Syncell. p. 92. According to Diodorus, Babylon was not yet founded, when Ninus conquered Mesopotamia. The same author also says, that Nineveh was not built till after Ninus had subdued the Babylonians. It is proved from scripture, that he was mistaken as to the date of the foundation of both these cities.

took Babylonⁱ. The first of these dynasties, whose kings were Chaldeans, possessed the throne 225 years^k. The second dynasty which was originally from Arabia, reigned 215 years. The total duration of these dynasties makes 440 years. If we add to these 440 the 150 years from the flood to the foundation of Babylon by Nimrod, the taking of Babylon by Ninus will fall in the 590th year after the flood, and consequently in the 1758th year before the Christian æra. After the taking of Babylon, the two monarchies formed but one state, under the name of the Assyrian empire^l. From thence the kingdom of Babylon was no more than a province of the Assyrian empire, to the time that the revolt of the Medes gave the Babylonians an opportunity of shaking off the Assyrian yoke, about 770 years before Christ^m.

Ninus died after a reign of 52 years, which had been one continued train of victories and conquests. He left but one son by his Queen Semiramis. Ninias (for that was the name of this prince), at the death of his father, was too young to reign by himself. For this reason, Ninus committed the administration of the government into the hands of Semiramisⁿ.

Semiramis mounted the throne, and took the reins of government into her hands in the year 1741 before Christ^{*}. This is one of the first examples in history of a throne filled by a woman, an example which has been followed in many countries. The Assyrian empire lost nothing of its glory by being committed to the conduct of a woman. Semiramis has equalled, if not excelled the greatest monarchs, in the lustre of her reign. We shall not neglect, in its proper place, to give an account of the great actions ascribed to this princess by antiquity; at the same time exploding the several prodigies and fictions which fable, taking advantage of the great distance of time, has mixed with her history.

ⁱ Jul. Afric. ap. Syncel. p. 90.

^k Id. ibid. & p. 92.

^l Id. ibid.; Diod. l. 2. p. 114.

^m See part 3. book 1. c. 1.

ⁿ Diod. l. 2. p. 120.; Justin. l. 1. c. 1. & 2.

^{*} The proof of this date is this. Diod. (l. 2. p. 114. & 120.) says that Babylon was the first conquest of Ninus. This prince spent but 17 years in his expeditions, and died immediately after; consequently Semiramis mounted the throne 17 years after the taking of Babylon, which we have placed in the year 1758 before Christ.

Semiramis was succeeded by her son Ninias, who ascended the throne in the year 1699 before the christian æra*, and reigned 38 years°. From this prince to the revolt of the Medes, that is, for a space of more than 800 years, we are ignorant of what happened in the Assyrian empire. The very names of the sovereigns who swayed the sceptre for so many ages, are not well known^p. This obscurity is commonly ascribed to the great effeminacy into which it is pretended the successors of Ninias were plunged^q. I shall examine the solidity of this opinion in the second part of this work. Let us now collect what the ancients have left us, concerning the constitution and form of government amongst the Assyrians and Babylonians.

From the commencement of these two empires, the government was monarchical, and the crown hereditary^r. But it would appear, that, to the reign of Ninus, these kingdoms had not much increased or improved. This prince has been considered by all antiquity, as the first monarch of Asia who had any knowledge of politics, or the art of reigning^s. It is to Ninus, without doubt, we must ascribe the division of the Assyrian empire into several provinces and governments; for we find this institution fully established in the reigns of Semiramis, and her successors^t.

We may observe further, that in the Assyrian empire, the people were distributed into a certain number of tribes^u, and that professions were hereditary; that is to say, children were not permitted to quit their fathers occupation, and embrace another^x. We know not the time nor the author of this institution, which from the highest antiquity prevailed almost over all Asia^y, and even in several other countries^z.

The Assyrians had one practice with respect to marriage, worthy of our attention. This practice however had its foundation in that custom, which, we have observed already, pre-

* Semiramis had reigned 42 years. Diod. l. 2. p. 134.; Justin. l. 1. c. 2.; Syncell. p. 96. 97.

° Syncell. p. 97. ^p Diod. l. 2. p. 136. ^q Justin. l. 1. c. 2.

^r Diod. l. 2. p. 135. ^s Justin. l. 1. c. 2. ^t Diod. l. 2. p. 129. 135.

^u Herod. l. 1. n. 200.; Strab. l. 16. p. 1082.

^x Diod. l. 2. p. 142. ^y See part 3. b. 1. c. 2. ^z Ibid.

vailed very early, and very universally, of the husband's as it were purchasing his wife ^a.

Every year they assembled in one place, all the young girls who were marriageable. The public crier put them up to sale, one after another. The rich paid a high price for those whose figure seemed to them the most agreeable. The money which was received for these, was bestowed as a portion with the more homely whom no body would have fancied. For after they had disposed of the most beautiful, the crier presented such as were less attracting, and asked if any one would accept of such an one with such a sum. The sale proceeded by coming lower and lower, and she was at last allotted to him who was willing to accept of her with the smallest portion. In this manner all the young women were provided with husbands ^b. This very politic and ingenious method of facilitating and promoting marriages, was also practised by several other nations ^c.

Besides, they were not permitted to carry off the persons they had purchased, till they had given sufficient security that they would marry them. If at any time it happened, that the parties could not agree, the man was obliged to refund the money he had received ^d. It was likewise very expressly forbidden to use women ill, or to carry them into any foreign country ^e. Herodotus informs us, that this wise institution was abolished, towards the end of the Assyrian monarchy ^f.

The Assyrians had several distinct councils, and several tribunals, for the regulation of public affairs. They reckon six of both kinds; three councils, and three tribunals, whose creation and authority were different. It would seem, that the three councils were created by the body of the people, to govern the state in conjunction with the sovereign. The first of these three councils was composed of officers, who had quitted the service after having spent the best of their days in

^a Supra, p. 23.

^b Herodot. l. 1. n. 196.; Ælian. var. hist. l. 4. c. 1.; Nicol. Damasc. ap. Stob. serm. 42. p. 293.; Strab. l. 16. p. 1081.

^c Pomp. Mela, l. 2. c. 2. p. 132. Mem. de Trev. Jan. 1708. p. 112.

^d Herod. l. 1. n. 196. ^e Id. ibid. ^f Ibid.

military employments. The nobility composed the second. The old men formed the third ^z. We are not informed what were the particular functions of those three councils.

The sovereigns on their part had created three tribunals, to watch over the conduct of their people. The functions of the first of these tribunals was to dispose of the young women in marriage, and punish adultery. The second took cognisance of theft; and the third of all acts of violence ^a.

It must not be forgot, to the honour of the Babylonians, that they are acknowledged, by all antiquity, to have been the first who made use of writing in their public and judicial acts ⁱ; but at what period, is not known.

As to the politics and personal conduct of the ancient monarchs of Assyria, if we were to judge of them by the sentiments of almost all the writers of antiquity, we could not despise their manner of governing too much. They accuse Ninias of having set a bad example, which his successors but too well imitated ^k. Without pretending to vindicate this prince from a share of those faults which the Asiatics have always been accused of, the few hints which are left us concerning his administration, seem to me to present us with the model of a very wise and prudent government.

The great end which Ninias had in view, was to prevent all cabals which might endanger the safety of the sovereign, or the tranquillity of the state. No measures could be more wise and effectual to this end than those which he pursued. He commanded a certain number of troops to be levied every year, in each province. This army formed an incampment round about the capital. At the end of the year, he dismissed these soldiers to their own homes; and commanded new ones to be raised in their room. This conduct answered two ends. On one hand, Ninias kept his subjects in obedience, by the sight of so numerous an army, always ready to march to chastise rebels at whatever distance. On the other hand, by the annual change of these troops, the officers and

^a Strab. l. 16. p. 1081. ^b Idem, *ibid.* p. 1082. ⁱ Syncell. p. 102. D.

^k Justin. l. 1. c. 2.; Diod. l. 2. p. 135.

soldiers were prevented from contracting over strict connections, or forming seditious enterprises. He took special care likewise to commit the government of provinces to none but such as were entirely devoted to his person¹, and each governor was obliged to repair to Nineveh every year, to give an account of his conduct².

They accuse Ninias of shutting himself up continually in his palace³. This was no doubt a piece of wrong policy. But they seem to have no sufficient proof of what they further surmise, that this prince concealed his person only to hide his views⁴. On the contrary, we find in those very writers who give Ninias this infamous character, several facts which cannot be reconciled with the idea they would give us of this prince. These authors, in effect, agree that he always took care to place good generals at the head of his armies, experienced governors in his provinces, and able judges in his cities; in a word, that he neglected nothing that appeared to him necessary to preserve order and tranquillity in his dominions⁵; and that he maintained peace during his whole reign⁶. What can be asked more? I am persuaded Ninias had no other view in shutting himself up in his palace, and living almost inaccessible, but to inspire his subjects with greater respect and veneration for his person. In the following books, we shall see, Dejoces King of the Medes, who has always been considered as the greatest politician of antiquity, pursuing the same conduct.

This plan of government formed by Ninias, was exactly followed by his successors⁷. We know not the detail of their actions. In the following books, we shall have occasion to speak our thoughts of the sentiments of the Greek writers concerning these ancient monarchs.

¹ Diod. l. 2. p. 135. ^m Nicol. Damasc. ap. Vales. excerpt. p. 425.

ⁿ Diod. *ibid.*; Just. l. 1. c. 2.

^o Diod. *ibid.* ^p Diod. l. 2. p. 135.

^q *Ibid.* p. 134. ^r Diod. Justin. *loc. cit.*

ARTICLE IV.

Of the laws and government of the Egyptians.

THE Egyptians, of all the nations of antiquity, are most worthy of our attention. We are particularly interested in their history. From them, by an uninterrupted chain, all the most polite and best constituted nations of Europe, have received the first principles of their laws, arts, and sciences. The Egyptians instructed and enlightened the Greeks; the Greeks performed the same beneficent office to the Romans. These lords of the world were not ashamed to borrow from the Greeks, the knowledge which they wanted, which they afterwards communicated to the rest of mankind, and of which we are in possession at this day. So many other considerations are joined to this, that none ought to be surpris'd, that I treat this article concerning Egypt at some length. This nation, in whatever light we view it, does the greatest honour to human nature, of all the ancient nations. The Egyptians present us with excellent models of all kinds of laws, arts, sciences, morals, and politics. But the more curious and interesting the history of this people is, it is the more to be regretted, that it is involved in darkness and obscurity. This may be ascribed in part to the vanity of the Egyptians. Wise as they were, they had that weakness common to all nations, of priding themselves on their prodigious antiquity. According to the Egyptian chronicles, their monarchy had continued more than one hundred thousand years[†]. It is easy to see the absurdity of these pretensions. I have pointed out the source and epocha of these chimerical pretensions, in my dissertation concerning that long series of ages the ancients loved to boast of[‡]. More interesting objects demand our attention.

Egypt was one of those countries which were soonest civilized. The ancients even believed, that the Egyptians were the very first people who had a regular and settled form of

[†] August. de civ. Dei, l. 18. c. 40.

[‡] See our dissertation at the end of the last volume,

government^u. To say all in one word, they were esteemed the inventors of monarchy^x. The sacred books confirm the testimony of profane authors, about the great antiquity of this kingdom. The kings of Egypt are there called the sons of ancient kings^y. Cham the son of Noah is considered as the leader of that colony, from the plains of Shinar, which settled in Egypt.

The events which followed that epocha are not known. The dates and duration of the reigns of the ancient kings of Egypt, are subject to a thousand difficulties, which I shall not attempt to resolve. Disquisitions of that kind are quite foreign to my design. In effect, it is of little importance to know the number of their dynasties, and the names of their sovereigns; it is far more essential to understand the laws, arts, sciences, and customs of a nation, which all antiquity has regarded as a model of wisdom and virtue. These are the objects I propose to examine, with all the care and exactness I am capable of.

It is certain that the monarchical form of government was established amongst the Egyptians^z from the earliest antiquity. This people, too, had the advantage of being governed for many ages by sovereigns born in the bosom of their country^a. It would appear also, that, in these first ages, this kingdom enjoyed long peace and great tranquillity^b. We may observe further, great steadiness and constancy in this nation, as to their laws, and form of government. Let us add, that Mneves, who is reckoned the first lawgiver of the Egyptians, had, as they pretend, put his laws into writing^c.

After these reflections, we need not be surprised to observe the

^u Arist. prob. l. 7. c. 10. p. 437.; Metereolog. l. 2. c. 14. p. 548. D.; Diod. l. 1. p. 13.

^x Plin. l. 7. sect. 57. p. 415.

^y *Filii regum antiquorum*, Is. c. 19. v. 11.

^z See Diod. l. 1. p. 13. 17.

^a Ibid. p. 53. 80.; Herod. l. 2. n. 100.

^b Strabo, l. 17. p. 1174. B.

^c Diod. l. 1. p. 105. Mneves without doubt has been esteemed the first legislator of Egypt, because he was the first who put his laws in writing. For before him Vulcan, Helius, and Osiris had given laws to Egypt. See Diod. l. 1. p. 17. 18. Chron. Alex. p. 45. But the laws of these princes had not been written.

the real state of Egypt, about 430 years after the flood, when Abraham was forced by a famine to go down into that country ^c. Even then Egypt was a very flourishing and well-regulated kingdom, able to support its own inhabitants, and even to afford relief to strangers. Moses represents the sovereign who reigned at that time, as a powerful and magnificent monarch, surrounded with a croud of courtiers, who studied to please his taste, and gratify his passions ^d. When Pharaoh dismissed Abraham, he loaded him with presents ^e.

That we may be the more sensible of the superiority of Egypt over other nations in these first ages, let us compare the behaviour of Pharaoh towards Abraham, with that of Abimelech King of Gerar towards Isaac in similar circumstances. This comparison will convince us of the great difference between a king of Egypt and a king of the Philistines at that time.

Abimelech is represented in scripture as hardly able to make head against Isaac. The power of this patriarch alarmed him; he required an oath from him that he would retire out of his territories. Isaac had dug some wells. Abimelech underhand raises disputes about them; at last that prince determines to go in person, and ask an alliance with the patriarch: he even makes him promise with an oath, that he will do him no hurt. The speech which Isaac makes to Abimelech on that occasion, is mingled with taunts and reproaches ^f. On the whole, we see, that he treated with the King of Gerar, at least as his equal.

If we go on, and observe the idea the scriptures give us of the state of Egypt in the days of Jacob, we shall discover still

written. The Egyptians, as well as all other nations, were long ignorant of the art of painting speech, and rendering it durable. As soon as they discovered this art, they no doubt employed it in writing and digesting their laws. Menes pretended to receive his laws from Mercury (Diod. p. 19.), and the Egyptians regarded Mercury as the inventor of hieroglyphic writing. Plato, p. 374. E. p. 1240, A.; Diod. l. 1. p. 19.; Plut. t. 2. p. 738. E.

^c Gen. c. 12.

^d Cum itaque ingressus esset Abraham Egyptum, viderunt Egyptii mulierem (Saram) quod esset pulchra nimis, & nuntiaverunt principes Pharaoni, &c. Gen. c. 12. v. 14. 15.

^e Gen. c. 12. v. 16. 20. c. 13. v. 2.

^f See Gen. c. 26. v. 27.

more clearly, many of the marks of a powerful monarchy, whose constitution and government was well regulated and thoroughly understood. We see a kingdom divided into several provinces or departments ^a, a council composed of persons of the greatest wisdom and experience, well-chosen ministers ^b, different prisons for the confinement of criminals ^c, a priesthood enjoying settled revenues ^d, public granaries ^e, a trade in slaves ^f, and in a word, a commerce which must have been considerable ^g. All these things sufficiently indicate a people who must have been very early civilized ^h.

Again, the kings of Egypt, in the times of Jacob, were surrounded with all that external pomp and splendor which adorn the majesty of sovereigns in the most polite nations. We see a captain of the guards ⁱ, a grand cup-bearer, a chief baker ^j. Pharaoh, in order to display the authority with which he had invested Joseph, gave him a ring from his own finger, made him be arrayed in vestures of fine linen, and adorned with a golden chain ^k; he commanded him to ride in one of the royal chariots, and a herald to proclaim before him, "Bow the knee to Joseph, and let every one acknowledge him as the appointed ruler of all the land of Egypt." All this pomp displays the splendor of a brilliant and magnificent court.

We are not however to imagine, that all those laws and maxims which have rendered the Egyptians so famous in the art of government, were the work of the first ages of their monarchy. Historians attest the contrary. They have preserved the names of several legislators, who from time to time

^a Gen. c. 41. v. 46. ^b Id. ibid. v. 37.

^c C. 39. v. 20. c. 40. v. 3. ^d C. 47. v. 22. ^e Ibid.

^f C. 37. v. 28. 36. ^g Ibid. v. 25. 28.

^h The Mexicans and Peruvians furnish us with an example how quickly a people may be civilized. When the Spaniards arrived in Peru and Mexico, these empires were very regular in their policy. They had good laws, were acquainted with several arts and sciences. The courts of their emperors were very brilliant and magnificent. Yet these monarchies had not subsisted above 350 years at most. We reckon about 650 from the flood to the time Jacob was in Egypt.

ⁱ Gen. c. 39. v. 1.

It is in this sense I imagine we should understand the office of *princeps exercitus*, which Moses gives Potiphar. We know the kings of Egypt had a guard of 2000 chosen men, who were relieved every year. Herod. l. 2. n. 168.

^j Gen. c. 40. v. 1. & 20.

^k Gen. c. 41. v. 42.

^l Ibid. v. 43.

augmented and improved the laws of Egypt^r. We must only assert, that this people were acquainted very early with some of the fundamental maxims of true policy. It is of importance to know what these maxims were. I shall endeavour to represent them, as history has transmitted them to us, observing as much as possible the order and epocha of each of the constitutions of which the historians speak. I shall not mention, at present, any but such as we know, and have reason to believe, took place in these ages now under our consideration. In the following books we shall speak of the regulations established in the respective ages which are the subject of these books. I reserve to the third part of this work, the reflections which I design to make on several laws and maxims which seem to merit a more particular attention.

We have seen, that from the beginning the throne was hereditary amongst the Egyptians^r. Their kings applied themselves particularly to settle and regulate the ceremonies of religion. All antiquity looked upon the Egyptians as the first who paid a solemn and public worship to the Deity^s. Their annals gave the honour of that institution to Osiris^x. It is evident from the sacred books, that the institution of public worship must have been very ancient in Egypt. In the days of Joseph the priesthood enjoyed great immunities. Moses says, they had received their lands from the bounty of the king^y, and paid no tribute for them^z. Diodorus informs us, that Isis gave the property of the third part of Egypt to the priests for their own maintenance, and furnishing the necessary sacrifices^a. They held them in the highest honour; they were the first order in the state, always near the person of the sovereign; they assisted him with their advice and instruction, and sometimes with their persons^b. The public records and archives were committed to the custody of the priests^c. In a word, they filled the highest offices

^r See Diod. l. 1. p. 105. & 106.; Herod. l. 2. passim.

^s See Diod. l. 1. p. 17.

^x Herod. l. 2. n. 4.; Porphy. ap. Euseb. praep. evang. l. 9. c. 10.

^y Diod. l. 1. p. 19. ^z Gen. c. 47. v. 26. See Herod. l. 2. n. 37.

^a Gen. ibid. v. 22.

^b Diod. l. 1. p. 25.

^c Ibid. l. 1. p. 84.; Strab. l. 17. p. 1136.

^d Diod. loco citato.

of the state, administered justice ^d, directed in the levying taxes ^e, had the inspection of monies, weights, and measures ^f.

The Egyptians were amongst the first who knew and observed this important maxim, That the union of the sexes ought to be under certain regulations. They ascribed the laws concerning marriage to their first sovereign ^g. It appears to have been the custom in Egypt to give portions with their daughters at marriage. We find Pharaoh (a good deal later indeed than the times we speak of) giving the city of Gazer as a portion with his daughter to Solomon ^h. The Egyptians were permitted to marry only one wife. Herodotus says this expressly ⁱ. Diodorus ^k must then have been misinformed, when he says, that the Egyptians, except the priests, might marry as many wives as they pleased. These people understood the fundamental maxims of policy too well, to be ignorant that polygamy was pernicious to population. The comparison of those countries where polygamy is allowed, with those where it is forbidden, proves this sufficiently. We discern the same wise policy in the principles of the Egyptian government, as in that which was brought from thence by Cecrops, and established in Greece. We see that the institution of the first marriage of one man with one woman, was one of the laws of that founder of Athens ^l.

In consequence of this principle, adultery was punished with great severity in Egypt. They gave the man a thousand stripes with rods, and cut off the woman's nose ^m; the law which punished this crime, so pernicious to society, was very ancient. It had been established by Heliuss the son of Vulcan ⁿ. The sacred books furnish us with an example of the high respect that was paid to the conjugal union in Egypt in the days of Abraham ^o.

The Egyptians were very respectful to the fair sex; they paid greater honour and obedience to their queens than to

^d Ælian. var. hist. l. 14. c. 34.

^e Clem. Alex. Strom. l. 6. p. 758.

^f Calmet in Exod. t. 2. p. 468.

^g *Supra*, p. 21.

^h 1 Kings c. 9. v. 16.

ⁱ Herod. l. 2. n. 92.

^k Diod. l. 1. p. 91.

^l Part 2. b. 1. c. 3. art. 1.

^m Diod. l. 1. p. 89. 90.

ⁿ Palaephatus. apud chron. Alex. p. 45.; Cedren. p. 19. D.

^o Gen. c. 12. v. 19.

their kings : even amongst private persons, the men promised in their marriage-contracts that they would be obedient in all things to their wives ^r. This custom arose from the high respect and veneration Isis had acquired by her excellent government, after the death of her brother Osiris ^q. The great happiness of the marriage of this princess with her brother, gave occasion to that law which permitted the marriage of brothers and sisters ^r.

The strength and prosperity of a state consists in the number of its inhabitants. The Egyptians were very sensible of this. The barbarous practice of exposing infants to death, so common in other ancient nations, was not allowed in Egypt. On the contrary, the Egyptians were commanded to preserve and bring up all their children ^r. They were even obliged to acknowledge for legitimate those they had by their slaves ^r. This people possessed the art of bringing up children at a very small expense ^r. The excellence of their climate contributed much to this ; for in warm countries it costs but very little to bring up and maintain children. They educated them in a very hardy manner, and at no great expense ^r. For these reasons the Egyptians were at once very numerous and capable of undergoing the greatest fatigues ^r.

Nothing contributes more to the peace and support of a state, than the veneration and obedience of children to their parents. The Egyptian legislators employed all the methods they could think of to inspire and cherish these sentiments in children. It was with a view of preserving this veneration, even after the death of their parents, that the art of embalming was invented. This custom was extremely ancient in Egypt ; it was practised in the days of Jacob ^z.

With respect to the police and constitution of the state, historians inform us, that Egypt was originally divided into a certain number of nomes, or provinces ^a. This division must have been very ancient ; for we find it had taken place in

^p Diod. l. i. p. 31.

^q Ibid.

^r Ibid. ; Philo Jud. de spec. leg. p. 780. A. ; Paus. l. i. c. 7.

^r Diod. l. i. p. 91. ; Strab. l. 17. p. 1179. 1180. ^r Diod. l. i. p. 91.

^a Ibid.

^x Ibid.

^y Ibid.

^z Gen. c. 50. v. 2. 3.

^a Diod. l. i. p. 84. ; Strabo, l. 17. p. 1135.

Joseph's time ^b. The same historians add, that all the inhabitants of Egypt were distributed into three classes, priests, soldiers, husbandmen and mechanics ^c. Strabo informs us further, that, in consequence of this primordial division, the lands of each province were divided into three parts, and one allotted to each class ^d. If we may believe Herodotus and Diodorus, the Egyptians were subdivided into several other classes ^e. This police might have taken place in the very earliest times. But another arrangement which Diodorus mentions, must have been posterior to the ages we are now upon: That all the lands were divided into three shares, one of which belonged to the king, one to the priests, and the other to the soldiers ^f; and that the husbandmen took these lands in farm for a very moderate portion of their produce ^g.

We learn from scripture, that, in the days of Joseph, every inhabitant was proprietor of a certain portion of ground, which he was obliged to sell to the king in the seven years famine which afflicted Egypt ^h. Joseph at that time acquired for Pharaoh the property of all the soil of Egypt ⁱ. The priests alone were not under a necessity of disposing of their domains, because they were furnished with a sufficient quantity of corn out of the royal granaries ^k. Joseph having thus obtained for Pharaoh all the lands, did not think it the interest of his sovereign, to reduce his subjects to beggary. For this reason, he returned the people their lands, on this condition, says Moses, that they should pay the king a fifth part of their produce annually. This institution still subsisted in the days of Moses ^l. Herodotus and Strabo confirm these facts. Herodotus says, that Sesostris (who, according to our chronology, mounted the throne a little after the death of Joseph) had divided all the land of Egypt amongst the inhabitants, and imposed a tribute upon each, according to the quantity he pos-

^b Gen. c. 41. v. 34. 46. ^c Diod. l. 1. p. 84. 85. ^d L. 17. p. 1136.

^e Herod. l. 2. n. 163. says that the Egyptians were divided into seven orders, viz. *priests, soldiers, shepherds, swinherds, merchants, interpreters, and sailors*, each denominated by the profession he followed. Ancient authors are divided on this subject. See Plat. in Tim. p. 1044. ; Isocrat. Busirid. p. 328. ; Diod. l. 1. p. 85. ; Strabo, l. 17. p. 1135.

^f Diod. l. 1. p. 84. ^g Ibid. p. 85. ^h Gen. c. 47. v. 18.

ⁱ Ibid. v. 20. ^k Ibid. v. 22. ^l Gen. c. 47. v. 24. 26.

ferred ^m. By the manner in which Strabo speaks of the revenues of the kings of Egypt, it would seem that he had also some knowledge of this fact. He says that the revenue of these monarchs consisted in the tributes which they levied from the lands, and industry of their subjects ⁿ.

The Egyptians were exceedingly exact and vigilant about the administration of justice, believing that the support or dissolution of society depended entirely upon that ^o. Their highest tribunal was composed of thirty judges. They placed at the head of this tribunal, the person who at once possessed the greatest share of wisdom, probity, and public esteem. The king furnished these judges with every thing necessary for their support ^p, so that the people paid nothing for obtaining justice. No advocates were seen in this tribunal. The parties were not even allowed to plead their own causes. All trials were carried on in writing, and the parties themselves drew up their own processes. Those who had settled this manner of proceeding, were very sensible, that the eloquence of advocates very often darkened the truth, and misguided the judges. They were unwilling to expose the ministers of justice to the bewitching charms of pathetic, affecting declamation. The Egyptians avoided this, by making each party draw up the state of his own case in writing ^q, and they allowed them a competent time for that purpose. But to prevent the protracting suits too long, they were only allowed to make one reply on each side ^r. When all the evidence necessary for their information was given in to the judges, they began their consultations. When the affair was thoroughly canvassed, the president gave the signal for proceeding to a

^m L. 2. n. 109.

ⁿ L. 17. p. 1135. C.

^o Diod. l. 1. p. 86. 87.

^p Ibid.

^q Ibid. All this, I imagine, must be understood with some limitations, otherwise we must suppose that all the inhabitants of Egypt had not only learned to write, but that they had sufficient talents and knowledge of the laws, to draw up their own defences, which is not to be supposed. This law then must have been liable to some exceptions and modifications.

We must say the same thing of those other countries, where they tell us there are no advocates, and that all trials are carried on in writing, as in Siam, China, Bantam, &c. Jour. des Scav. 1638, Mai, p. 239.; Anc. relat. des Indes & de la Chine, p. 194. 203.; Rec. des voyag. Holland. t. 1. p. 351. 352.; Mém. de Trev. Sept. 1717, p. 1495.

^r Diod. l. 1. p. 87.

sentence,

sentence, by taking in his hand a little image adorned with precious stones, which hung at a chain of gold about his neck. This image had no eyes, and was the symbol the Egyptians used to represent truth^r. Judgment being given, the president touched the party who had gained his cause with this image. This was the form of pronouncing sentences^r. According to an ancient law, the kings of Egypt made the judges take an oath at their installation, that if the king should command them to give an unjust sentence, they would not obey him^s.

The use of seals or signets, in attesting and authenticating deeds, is very ancient, and were used in Egypt. Diodorus informs us, that any person who counterfeited the king's seal, had both his hands cut off^x. It appears that the use of seals was established in Egypt in Joseph's time. The ancient seals were commonly ingraved on the bezil of the rings which they wore. It is said in scripture, that when Pharaoh intrusted Joseph with an unbounded authority over all Egypt, he took his ring from his finger, and gave it to this patriarch^y. From this fact we have reason to think, this ring was the royal seal, and that Pharaoh gave it to Joseph, as a mark of the absolute power over his kingdom with which he had intrusted him.

After having described the manner in which justice was administered amongst the Egyptians, it will not be improper to mention a few of the laws which rendered that people so famous in antiquity, some of which subsist to this day among us^z. At present, I shall only speak of their penal laws, for historians hardly mention any other. They say but little of the civil laws of Egypt: and those which they have recorded, were made by sovereigns who reigned in much later times than those we are now treating of. I have already acquainted the reader, that I would range them under their different epochas. I reserve too, for the article of war, all laws rela-

^r Diod. l. 1. p. 58. 86. 87.

^r Ibid. p. 86. 87.

^s Plut. t. 2. p. 174. C.

^x L. 1. p. 89.

^y Gen. c. 41. v. 41. 42.

^z *Solon sententiis adjutus Ægypti sacerdotum, latisque justo noderamine legibus, Romano quoque juri maximum addidit firmamentum.* Ann. Marcell. l. 22. p. 346. See also part 3. b. 1. c. 2.

ting to the military state; they were made by Sesostris, and I shall speak of them in the second part of this work.

The sacred books attest the antiquity and severity of the penal laws of Egypt. There were in Joseph's time several prisons for confining criminals ^a. Punishments were then extremely severe. Pharaoh's chief baker was condemned to death ^b. Moses, it is true, does not specify the crime that officer was guilty of; but what he says sufficiently proves, that in that age capital punishments were established in Egypt. Profane historians have transmitted to us a very circumstantial detail of the penal laws of Egypt, which we shall lay before our readers.

Whoever had it in his power to save a man's life, who was going to be killed, and did not, was punished with death. If he was not able to defend the person assaulted, he was bound to inform against the author of the violence: if he neglected to do this, he was to receive a certain number of lashes, and to be kept three days without meat ^c. Thus all the citizens were protectors of one another, and every member of the state interested in preventing or punishing all acts of violence. We may mark, even in some of their institutions, the motives of which are not very obvious, an extreme attention of the government to the preservation of the people.

Herodotus tells us, that when a person was found dead, whether a stranger or an Egyptian, in whatever manner the accident had happened, whether he had been assassinated, slain by a crocodile, drowned in the Nile, &c. the city nearest the place where the body had been found, was obliged to embalm it in the most magnificent manner, and give it a most sumptuous funeral ^d. This seems to have been a very wise and politic regulation, to oblige the several cities to take all possible precautions to prevent accidents, and provide for the security of their territories. It was their interest to do this, to avoid the great expense attending the embalming and burial of the bodies found dead, according to that law.

Wilful murder was punished with death, whether the per-

^a Gen. c. 39. v. 20.

^b Chap. 40. v. 22.

^c Diod. l. 1. p. 83.

^d L. 2. n. 90.

son slain had been a freeman or a slave^e. By this law, the lives of persons of all ranks were equally secured. We find a remarkable example of this in the adventure of Joseph with the wife of Potiphar. Joseph was at that time the slave of this too credulous husband, who is represented by Moses as one of the greatest lords in Pharaoh's court. Though he was fully persuaded that Joseph had offered him the most outrageous and provoking affront, yet, on this delicate occasion, he did not break out into any act of violence against his slave; he sent him to prison, that he might be tried, convicted, and punished in a legal manner^f.

We cannot bestow too great praises on this manner of thinking and acting. The kind treatment masters were obliged to give their slaves, must necessarily have produced the happiest effects, by inspiring all the members of the society with humanity, mildness, and mutual benevolence.

The Egyptians had contrived an extraordinary punishment for parricides. They forced little pieces of reeds, about a finger's length, into all parts of their bodies, and then surrounded them with faggots of thorns, to which they set fire^g.

As for those unnatural parents who had killed any of their children, they were not put to death. The Egyptians exempted them from the common fate of murderers, but had invented a punishment for them more severe than death. These wretched parents were obliged to hold in their arms, the dead bodies of their murdered children, for three days and three nights successively, in public, amidst the guards which surrounded them^h.

Perjury was unpardonable, and punished with death. The Egyptians esteemed this crime equally injurious to the gods and men: to the gods, by bringing their majesty into contempt; to men, by destroying the strongest bonds of society, sincerity and good faithⁱ.

A calumniator was condemned to the same punishment the person would have suffered if the accusation had proved true^k.

^e Diod. l. 1. p. 88.

^g Diod. l. 1. p. 88.

^f Gen. c. 39. v. 16. &c.

^h Ibid.

ⁱ Ibid. p. 87.

^k Ibid. p. 88.

Those

Those who discovered any secrets of the state to its enemies, had their tongues cut out^l.

Those who counterfeited the current coin, the king's seal, or the seals of private persons, together with such as used false weights or false measures, were condemned to have both their hands cut off^m.

Public notaries who had forged false deeds, or who added any thing to, or suppressed any part of the writings they had received to copy, were condemned to the same punishment. Thus every one was punished in that part which had been the instrument of his crimeⁿ.

The laws against all attempts on the honour and chastity of women, were very severe. Whoever violated a free woman, was made an eunuch^o. I have already mentioned the punishment of adulterers^p.

The conduct of the Egyptians towards pregnant women who had been condemned to death, does honour to their equity and wisdom. They delayed the execution till after they were delivered^q. This law, so agreeable to humanity and right reason, has been adopted by the Greeks, and by all civilized nations in general^r.

That trial which the character of every Egyptian underwent immediately after his death, may, I think, be ranked amongst their penal laws. It is generally known, how much the ancients were concerned about the disposal of their bodies after death. To be deprived of burial, was considered as the greatest of calamities. In Egypt no one could hope for the honours and advantages of a funeral, but by virtue of a public and solemn decree. The tribunal which pronounced these awful decrees, was composed of forty judges^s. As soon as a man died, his friends informed that court of the time they designed to bury him. The judges assembled on the day appointed. The law permitted any person to accuse the deceased. If he was convicted of having lived ill, he was refused the honours of burial. On the contrary, if no reproach was fixed upon

^l Diod. l. 1. p. 89.

^m Ibid.

ⁿ Ibid.

^o Ibid.

^p *Supra*, p. 52.

^q Diod. l. 1. p. 88.

^r Plut. t. 2. p. 552. D.

^s Diod. l. 1. p. 103.

his memory, they pronounced his panegyric with a loud voice, and buried him honourably [†]. The ancients have remarked, that, in these funeral orations, they never once mentioned the rank or family of the deceased. All the Egyptians believed themselves equally noble; nobility of birth or blood was a thing unknown amongst that people [‡].

The most surprising and admirable circumstance of this public inquest is, that even royalty was not exempted from it: kings, as well as others, were subjected to it. As long as they lived, they had so profound a veneration for their sacred persons, that they never ventured to condemn any of their actions; but this did not screen them from that trial all were obliged to undergo after death. On the day appointed for the royal funeral, a public audience was held, according to law, where all complaints and accusations were received against the deceased monarch. The manner of proceeding was. The priests began the solemnity with pronouncing his panegyric, and celebrating his good actions. If the monarch had really reigned well, the innumerable multitudes who attended, answered the priests with loud acclamations; but a general murmur ensued if he had reigned ill; and some kings have been deprived of burial, by the decision of the people [×].

This custom of judging their kings after their death, may be traced up to the earliest ages of the Egyptian monarchy [†]. It appeared to the Israelites so wise a practice, that they in part adopted it. We see in scripture, that the kings who reigned ill, were not buried in the sepulchre of their fathers [‡]. Josephus informs us, that this custom was also observed in the time of the Asmonean princes [×].

[†] Diod. l. 1. p. 103.

[‡] Ibid. p. 83. 84.

[×] Diod. l. 1. p. 81. & seq.

[‡] Ibid. p. 84. lin. 65.

[‡] 2 Chron. c. 21. v. 19, 20. c. 24. v. 25. c. 28. v. 27. 2 Kings c. 21. v. 24.

[×] Antiq. l. 13. c. 23.

ARTICLE V.

Of the Laws and Government of Greece.

THE glory of a nation is not always to be measured by the number of its people, or extent of its provinces. The whole territories of ancient Greece were not so large as two of the best provinces of France; and yet the history of no nation of antiquity has excited such eager and universal curiosity. The Greeks acted the same glorious part in Europe the Egyptians did in Africa. This nation presents to an inquisitive mind, the most precious monuments of antiquity, the most surprising events in history. By whom are these things presented? By writers of the most uncommon merit, by historians who had the happy talent of making events inconsiderable in themselves, appear important and interesting^b. The subject is noble and extensive; but so much has already been wrote upon it, that it will not be necessary to treat it at full length. We shall chuse only the most striking and most authentic events.

We cannot depend upon the first part of the Greek history. Though the antiquities of this country have been transmitted to us by its natives, who ought to have been best acquainted with its history; yet it must be owned, they give us but a very confused idea of the primitive state of that part of Europe. The facts are so much disguised by fables, that it is very difficult to discern the truth. Yet as these fables had a foundation in history, we must make use of them for these remote ages.

The Greeks had the same vanity with other nations. If we believe their popular traditions, their antiquity was immemorial; they not only boasted of being the first inhabitants of that country, but that they had from all ages, if we may so speak, inhabited it. The Athenians boasted that they were

^b We need no other examples of this than those trifling wars in Peloponnesus and other places, which no body would have regarded, had it not been for the superior art of their historians,

as ancient as the sun^c. The Arcadians pretended they were older than the moon^d: the Lacedæmonians called themselves the sons of the earth^e, &c. Such in general was the madness of the ancients on this subject of the origin of their respective nations! They loved to lose themselves in an abyss of ages, which seemed to approach eternity. We can say nothing at all certain concerning the origin of the Greeks, but what we learn from scripture. Moses is the only faithful guide in the history of the first peopling of countries. The tenth and eleventh chapters of Genesis diffuse more light on that subject, than all the writings of profane historians, which, on this head, are nothing but a heap of confusion, conjectures, and contradictions.

It is evident to a demonstration, that the west was peopled from the east. Javan the son of Japhet, and grandson of Noah, is undoubtedly the stem of all those people which were called Greeks^f. The scriptures inform us, that the posterity of this patriarch settled near the western shores of the Lesser Asia^g. It is probable, they would not be long in passing from thence to the continent of Europe^h.

We find several nations anciently settled in Greece, of whose origin and history we have not the least knowledge. Such were the Pelasgi, the Aones, the Hyantes, the Lelegi, the Carians, the first inhabitants of Arcadia, Attica, &c. Of all these ancient colonies, the Pelasgi were the most consider-

^c Menander Rhetor, apud rhetor. Graec. veter. edit. Ald. 1508. in fol. p. 604.

^d Ovid. fast. l. 2. v. 290.; Lucian. de astr. n. 26.; Menand. Rhet. loco cit.

^e Pausan. l. 3. c. 1. Let us observe, that these fine opinions were only current among the vulgar. The fine geniuses amongst the Greeks always treated them with contempt. None but the declaimers or sophists mentioned them for the sake of popularity. See *infra* § 1. note ^f. p. 67.

^f The name of Ionians was common to all the people of Greece. It is remarkable that the letters of the Hebrew word *Javan* without the points form the word *Ion*. See Bochart Phaleg. l. 3. c. 3.

Let us observe further, that the Indians, who often mention Alexander in their poems, call him *Javan*, *Raja*, king of the Javans, Lettr. édif. t. 26. p. 230.

^g Gen. c. 10. v. 4. 5.; Jos. antiq. l. 1. c. 6. init.

^h See le Clerc in not. ad Hesiod. p. 28. 29.

able ^r. In the remotest antiquity we meet with the Pelasgi, not only in several parts of Greece, but in the island of Crete, in Italy, and even on the coasts of the Lesser Asia ^k.

The ancients have left us nothing satisfactory concerning the origin of the Pelasgi. Some tell us, that this people were originally from Arcadia, and that they derived their name from one Pelasgus, who had taken possession of so great a part of Peloponnesus, that the whole country was called from him *Pelasgia*, and the people *Pelasgi* ^l. But the variety of the stories given us by writers concerning this prince, is a proof of their ignorance of his origin and country ^m. Others, without pretending to discover the origin of the Pelasgi, say, that they derive their name from their unsettled wandering manner of life; which seems to me the most probable opinion ⁿ.

Next to the Pelasgi, the Carians seem to have made the greatest figure in these first ages in Greece. We see them spread over the islands of the Archipelago, and the coasts of the Lesser Asia in the earliest times. It remains to examine whether the Pelasgi and Carians were originally one colony, or whether the Pelasgi were descended from Javan, and the Carians from the Phœnicians, that is, Canaanites, who very early sailed those seas which separate Europe from Asia. The little hopes of succeeding in this inquiry, dissuades me from engaging in it ^o.

All that we know is, that the inhabitants of Greece lived originally without intercourse or connection with each other. There were no laws, no superior power to unite them; every thing was determined by mere strength and violence ^p. It would be difficult to believe the extreme barbarity of the first Grecians, if we had not the testimony of their own writers ^q. Who could imagine, that that ingenious people,

ⁱ Strabo, l. 5. p. 337. C.

^k Herod. l. 2. n. 50. & seq.; Dion. Halicarn. l. 1. p. 14.; Strabo, l. 5. p. 337. & seq.

^l Hesiod. apud Strab. l. 5. p. 338.; Apollod. l. 2. p. 59.; Stephan. Byzant. voce Πελασγία, p. 539.; Paulan. l. 8. c. 4.

^m See Bannier, explicat. des fables, t. 6 p. 30.

ⁿ Dion. Halicarn. l. 1. p. 21.; Strabo, l. 5. p. 339.

^o See les mém. de l'acad. des inscript. t. 9. mem. p. 113. t. 21. hist. p. 14.

^p Thucyd. l. 1. p. 2. 3.; Strabo, l. 3. p. 238.

^q Æschyl. in Prom. vincito, v. 442.; Ocell. Lucan. c. 3. p. 530. in opuscul. mythol. See also le Clerc, in not. ad Hesiod. p. 37.

to whom Europe is indebted for all its knowledge, were descended from savages, who wandered in the woods and fields, without laws or leaders, having no other retreat but dens and caverns^r, without the use of fire^r, or of food proper for men^r; nay, so ferocious as sometimes to eat each other^r. A journey so long and difficult as that betwixt Asia and Europe must originally have been, together with the tumult and confusion attending new settlements, made the greatest part of the descendents of Javan lose all the remains of knowledge which had been preserved after the deluge^{*}.

A country so fair and pleasant as Greece is, must very soon have invited several of these numerous adventurers to take possession of it. Accordingly, this part of Europe, in these first ages, was the scene of many changes and revolutions. We are ignorant, no doubt, of the greatest part of these very distant events. We know only, that, about the time of Abraham, near 2000 years before the Christian æra, a colony came from the east, and took possession of Greece. Europe at that time was but thinly peopled. A small handful of men would be sufficient to subject large countries[†]. The leaders of this new colony were those princes, so famous in ancient history, under the name of Titans, Saturn, Jupiter, &c. These strangers, having seized upon Greece, fixed there the seat of a very extensive empire.

^r Ovid. metam. l. 1. v. 121.; Plin. l. 7. sect. 57. p. 413.; Paus. l. 8. c. 1. p. 599.

^r See the following book, *init.* ^t Ibid.

^u Hygin. fabl. 274. p. 329.; Schol. Pindar. ad Pyth. 4. v. 107. p. 219.; Acad. des inscript. t. 5. m. p. 118. t. 9. m. p. 203.

^{*} A very simple comparison may make us conceive how the first colonies which came from Asia to Europe might lose the greatest part of their knowledge. Let us suppose a hundred persons, men and women, who had left a civilized country, cast upon a desert island, and resolved to settle in it. They would presently find themselves in want of every thing, and obliged to supply these wants by very coarse expedients, and for want of practice would soon forget the arts used in their native country. A spirit of discord and independence would creep in amongst them; they would soon disband, and fall at once into the greatest misery and the grossest ignorance. See gen. hist. des voy. t. 11. p. 206. 207.

[†] The conquest of America by the Spaniards renders this assertion probable. The Titans, as we shall see hereafter, came from a civilized country in comparison of that they invaded. This was at least 352 years after the deluge, according to the Hebrew chronology.

It is difficult to discover, from what part of the east these conquerors came, who were so famous in the ancient times of Greece. Did they come from Scythia, Phrygia, Phœnicia, or Africa? These questions are by no means determined. I am of opinion, they came from Egypt; and here are my reasons for that opinion.

Herodotus assures us, that the worship of the greatest part of the first gods that were adored in Greece, came from Egypt ^x. He excepts only Neptune, and says farther, that this worship was derived from Libya ^y. Saturn, Jupiter, Ceres, &c. were the first gods of Greece. It is very probable, that the Titans introduced these gods into Greece, and consequently, that these princes came from Egypt; for the worship of Saturn, Jupiter, and Ceres, &c. was established in Egypt, time immemorial ^z. The leaders of colonies do not change their religion with their country; but when they have made good their settlement, they endeavour to establish their religion. This happened in Greece. All the different leaders of colonies which settled there from time to time, introduced the religion of the countries from whence they came. Some of these leaders themselves had divine honours paid them. I imagine the Titans were the first who enjoyed this distinction. The Greeks conceived so high a veneration for the memory of these conquerors, that at last they confounded and identified them with the divinities they had introduced from Egypt into Europe. Mankind, in those days of darkness, voluntarily deified those who had communicated to them any necessary and useful piece of knowledge ^a, and it was the Titans taught the Greeks the first elements of the arts and sciences ^b. This is another proof, that those princes came from Egypt, where human learning seems to have arisen, and been brought to perfection sooner than in any other country.

It appears further, that these first colonies did not contribute very much to civilize Greece. The Titans, it is true, brought some seeds of useful knowledge into that part of Europe ^c, but these first seeds did not thrive in that soil. The monarchy

^x L. 2. n. 50. See also Diod. l. 1. p. 109. ^y Ibid.

^z Diod. l. 1. p. 17. ^a See Diod. l. 5. p. 381.

^b Ibid. p. 374. &c. 381. &c.; Pausan. l. 2. c. 11.

^c See part 2. book 2. sect. 2. c. 1.

founded by these foreign princes was but of short duration. After the death of Jupiter, Neptune, and Pluto, the family of Saturn had no heirs in the right line, and the vast empire which they had conquered and formed fell to pieces, and Greece sunk again into anarchy, ignorance, and barbarism. It happened then, as it would certainly happen in America now, if the Europeans should abandon it. The greatest part, if not all the natives, would return again into their forests, and become savages.

The government of the Titans in Greece produced but few good effects. This was owing partly to its short duration, and partly to their manner of life. These conquerors neither built nor inhabited towns^a. We do not hear so much as of one city founded by them. They lived in tents, which they usually pitched on mountains and other places fortified by nature. It was not at all surprising, that, after the extinction of these monarchs, the Greeks so easily returned to their former habits.

The honour of civilizing Greece was reserved for those colonies, who, some time after the extinction of the Titans, went from Egypt and Phœnicia into that part of Europe. In the space of two ages at most several strangers at the head of different colonies arrived successively in Greece, and possessed themselves of different districts, of which they became the sovereigns. These new chiefs at that time practised in Greece what has been some time or other practised in all nations, and is still daily practised in America^c. They collected some vagabond and wandering families, prevailed upon them to unite and live in society, taught them the most useful and necessary arts of life, built them houses, gave them laws, and brought them to submit to government. These settlements were attended with happier and more lasting consequences than the short-lived empire of the Titans.

The chief circumstances of most of these events are pretty well known to us. We can tell nearly in what age the several leaders of these new colonies lived; particularly Ogyges, Inachus,

^a Hygin. fab. 148.

^c Hist. des Incas, t. 1. p. 20. 22. ; Nouv. relat. de la France equinox, p. 23. ; Lettr. édif. *passim*.

Cecrops, Cadmus, Lelex, and Danaus. By these chiefs the kingdoms of Athens, Argos, Sparta, and Thebes, were founded one after another. We shall endeavour to unfold these events in their proper time and order. This will reduce what I have to say of Greece in this first part of my work to a few objects. I shall speak only of two of these kingdoms at present, those of Athens and Argos, and I have but a few words to say of each of these. The other kingdoms of Greece were not founded in the ages we are now considering.

§ I.

A T H E N S.

AThens without doubt was one of the first states of Greece that had a regular form of government. As Attica was but a dry and barren country, it was not exposed to the jealousy of its neighbours, and consequently little liable to revolutions. Its first inhabitants still kept possession of their native soil. This gave occasion to their extravagant boasts of their antiquity. They pretended they had sprung from the soil they inhabited, like plants or other vegetables. They had even adopted a name to characterise this ridiculous pretension. They called themselves *Autochthones**, a name which mightily pleased and flattered the vanity of the Athenians.

It is not possible to determine precisely when the Athenians began to have a settled form of government. The most pro-

^f Herod. l. 7. n. 161.; Thucyd. l. 1. p. 3.; Justin. l. 2. c. 6.

* *Αὐτοχθόνες*. This favourite epithet of the Athenians, signifies only people born in the country where they live, in opposition to strangers. The common people of Athens perverted this to signify people sprung from the earth. See what Plato makes Socrates say on this matter, in *Menexen*, p. 518. See also Isoc. in *panaeg.* p. 65.; Cicer. *orat. pro L. Flac.* n. 26.

Isocrates tells us, people of sense at Athens took this word in a more moderate sense: they understood by that epithet, that Athens was the most ancient of the Greek cities, and that it had been built by those who, time immemorial, had been established in the country known by the name of *Attica*. Isoc. in *panaeg.* p. 64. 65. See also Herod. l. 7. n. 161.; Suid. *voce Αὐτοχθόνες*, t. 1. p. 389.; Acad. *des inscrip.* t. 23. m. p. 120.

History, as we shall see, destroys even this last pretension. Few things are better known than the time of the building of Athens.

bable opinion is, that Ogyges was their first king^z; but we know not who this Ogyges was, nor the country from whence he came. It is evident, notwithstanding what is said by some Greek authors, that he was not a native of Greece. His name is a sufficient evidence that he was a stranger^h. But we cannot determine whether he came from Egypt, from Phœnicia, or from some province of the Lesser Asiaⁱ. We know nothing of his actions, but that he had a son by Thebe the daughter of Jupiter, named *Eleusinus*, who built the city of Eleufis^k. They name several kings between Ogyges and Cecrops, but we are quite ignorant of their history^l. In the reign of Acteus, the last of these unknown princes, Cecrops arrived in Attica at the head of an Egyptian colony, 1582 years before Christ^m. It is here, properly speaking, the history of Athens begins. We refer the sequel of it to the second part of our work.

The age of Ogyges, which may be fixed about 1831 years before the Christian æra, was very remarkable for an inundation which happened in Greece. This event, so famous in antiquity, under the name of *the deluge of Ogyges*, happened about the year 1796 years before the Christian æra. We have just now said, that from that prince to Cecrops we have no connected history of the kings of Attica. The ancients attributed this silence to the ravages of that deluge. Some have even affirmed, that Attica was depopulated by it, that it lay waste near two hundred yearsⁿ. But this fact is by no means proved; on the contrary, it is evident from the testimony of all antiquity, that this was only a passing inundation occasioned by the overflowing of the lake Copais, whose outlets at that time were stopt up^o. This overflowing drowned some villages in Bœotia and Attica^p; but the country in gene-

^z Euseb. chron. l. 2. p. 66.; Tatian. p. 274.; Etym. mag. voce *Ωγυγος*. It would seem he was king of Boeotia too. Paus. l. 9. c. 5.; Etym. mag. loco. cit.

^h Bannier, expl. des fab. t. 6. p. 58.

ⁱ See Bianchini hist. univers. p. 286.

^k Paus. l. 1. c. 38. p. 93.; Euseb. præp. evang. l. 10. c. 10. p. 489. C.

^l Paus. l. 1. c. 14. sub fin.; Anton. liberal. metam. c. 6.

^m Paus. l. 1. c. 2.; Diod. l. 1. p. 33.

ⁿ Afric. apud. Euseb. præp. evang. l. 10. c. 10. p. 497. A.

^o Strabo, l. 9. p. 623.

^p Strabo, l. 9. p. 624; Paus. l. 9. c. 24. *igit.*

ral still continued to be inhabited. As to the events which happened in it, I have already said they are totally unknown to us. I now proceed to the establishment of the kingdom of Argos, whose origin and history are somewhat better known.

§ II.

ARGOS.

THE kingdom of Argos, one of the first that was formed in Greece, was founded by Inachus¹. Ancient tradition makes this prince the son of Oceanus and Thetis²; the meaning of which is, that he came by sea into Greece. It is probable Inachus came from Phœnicia as his name seems to indicate³. This prince fixed in the Peloponnese in the year 1822 before Christ. The sequel of his history is little known, only that he had two sons Phoroneus and Ægialeus, from his marriage with his sister Melissa⁴. Phoroneus, being the eldest, inherited the kingdom of Argos⁵. Ægialeus founded a small state in Peloponnesus, called afterwards the kingdom of Sicyon⁶. It does not appear that Inachus had any settled habitation, but lived in tents like the Titans we have already spoke of⁷.

Inachus only laid the foundation of the kingdom of Argos, his son Phoroneus brought it to perfection. He assembled the people who wandered in the neighbouring woods and mountains, persuaded them to leave these gloomy recesses, and build houses near each other⁸. By these means this prince built a city and several villages⁹. It was not enough to collect these savages together, and persuade them to live in society; it was also necessary to teach them the means of procuring subsistence after their union. Phoroneus applied himself to this. He begun by teaching his new subjects an

¹ Strab. l. 8. p. 578; Ocell. Lucan. c. 3. in opuscul. mythol. p. 537.

² Apollod. l. 2. init.

³ Bannier, explic. des fab. t. 6. p. 39; Bibl. univ. t. 7. p. 401.

⁴ Apollod. l. 2. init; Hygin. fab. 143.

⁵ Apollod. l. 2. init. ^x Ibid. ^y *Supra*, p. 65. ^z Paus. l. 2. c. 15.

⁶ Id. *ibid.*; Plin. l. 7. sect. 57. p. 431; Anonym. de incred. c. 1. p. 85.

easy and commodious method of procuring and making use of fire^b. He also instructed them in the means of obtaining and preparing provisions, and, no doubt, taught them several other arts, the particulars of which are unknown to us. Still further to secure the peace and happiness of his people, he gave them laws^c, and erected tribunals in each district for the administration of justice^d. In a word, in order to soften and civilize their savage minds, he learned them to honour the Deity by public and solemn worship, he instituted sacrifices, and consecrated altars^e. Such important services made Phoroneus be looked upon by posterity as one of the greatest men who had appeared in Greece^f, and the greatest king of that part of Europe^g.

After the death of Phoroneus, his son Apis succeeded to the throne^h; and the kingdom of Argos was for a considerable time governed by a race of kings descended from this family. They reckon nine of these kings from Inachus to Gelanor. Danaus coming from Egypt, deprived this last of his kingdom, in the manner I shall relate in the second part of this work. These first kings were called *Inachidæ*, to distinguish them from those who succeeded Danaus. As their reigns contain little remarkable, I do not think it necessary to give any account of them.

Let us now proceed to more general and interesting objects; to consider mankind in a new point of view; to examine what were the consequences of the establishment of government and laws, with regard to the arts, sciences, commerce, and navigation; and to see, with respect to war, the effects which ambition has produced in it, and the progress which that fatal passion has made in the military art: in a word, let us follow the footsteps of the human mind, and endeavour to form a just idea of the state of mankind in these remote ages, from the few historical monuments which remain. We shall begin with arts.

^b Paus. l. 2. c. 19.

^c Clem. Alex. t. 1. p. 84.; Tatian. p. 274.; Euseb. chron. l. 2. p. 65.

^d Euseb. ibid.; Syncell. p. 67. & 125. ^e Hygin. fab. 143. & 225.

^f Plat. in Tim. p. 1043; Clem. Alex. t. 1. p. 380.

^g Hygin. fab. 143.; Plin. l. 7. sect. 57. p. 412.

^h Apollod. l. 2. p. 59.; Stephan. Byzant. voce *Απία*, p. 93.

B O O K II.

Of Arts and Manufactures.

THE invention and improvement of arts was one of the first and happiest fruits of the reunion of families, and institution of government. Necessity was the first preceptor of mankind. Necessity taught them how to employ the hands which Providence had given them, and to use the gift of speech which they had received in preference to all the other creatures. But these first discoveries would never have been brought to any great perfection without the reunion of families, and the institution of laws and government. By means of these the first rude inventions, the effects of chance or necessity, were brought to perfection by degrees. Accordingly we find, that the discovery and improvement of arts are ascribed to those nations which were first formed into regular states and governments. It is by long experience, and by communicating their thoughts and observations to one another, that mankind has acquired the knowledge of that great multitude of arts which civilized nations have long enjoyed.

We cannot doubt, that many arts were known and practised before the deluge. Moses tells us, that Cain built a city^a; that Tubal-Cain understood the art of working metals, particularly iron^b, and his brother Jubal was the inventor of musical instruments, &c. ^c. But the greatest part of these arts perished in the deluge. Even those which were preserved by Noah and his sons, could not be of any great service to those first men who repeopled the earth. The confusion of tongues, and dispersion of families followed so soon after the deluge, that the greatest part of the descendents of Noah had not sufficient time to make themselves masters of the arts which he could have taught them. Besides, the long journeys they undertook

^a Gen. c. 4. v. 17.^b Ibid. v. 22.^c Ibid. v. 21.

after the dispersion, made them forget what they had learned for want of practice. All this is acknowledged by the best writers of antiquity. They unanimously declare, that the arts were lost in the deluge, and that it was a very long time before they were discovered again, because the earth was almost a desert, and the first men had little communication with one another^d. I have already had occasion to take notice of the extreme ignorance and barbarity of mankind in these first ages^e. They were strangers to the most common and simple notions, and unacquainted with those arts which we esteem the most necessary to life.

Is it not, for example, astonishing, to think that there was a time when a great part of mankind knew nothing of fire, and were quite ignorant of its properties and use? This, however, is a truth attested by the most ancient and most unanimous tradition. The Egyptians^f, Persians^g, Phoenicians^h, Greeksⁱ, and several other nations^k, acknowledged that their ancestors were once without the use of fire. The Chinese confess the same of their progenitors^l. However incredible these facts may appear, yet they are confirmed, by what several writers, both ancient and modern, have declared of nations who were their cotemporaries, and in this state of ignorance and barbarity when they knew them. Pomponius Mela^m, Plinyⁿ, Plutarch^o, and other ancient authors^p, speak of nations, who, at the time they wrote, knew not the use of fire, or had but just learned it. Facts of the same kind are attested by several modern relations.

The inhabitants of the Marian islands, which were discovered in 1521, had no idea of fire. Never was astonishment

^d Plato de leg. l. 3. p. 804. 805.

^e See above, b. i. p. 3.

^f Diod. l. 1. p. 17.

^g Sanchoniast. apud. Euseb. p. 34. D.

^h Bannier, explic. des fabl. t. 3. p. 201.

ⁱ Diod. l. 5. p. 384.; Plut. t. 2. p. 86. E.; Paus. l. 2. c. 29.

^k See Hesiod. op. v. 50.; Lucret. l. 6. v. 953.; Virgil. georg. l. 1. v. 131. & 135.; Diod. l. 1. p. 12. l. 5. p. 381.; Vitruv. l. 2. c. 1.; Plut. t. 2. p. 956. B.; Porphy. de abst. l. 1. p. 29.; Lettr. édif. t. 18. p. 225.

^l Martini hist. de la Chine. t. 1. p. 20.; Essai. sur les hierogl. des Egypt. p. 448.

^m Book 3. p. 296.

ⁿ Book 6. sect. 35. p. 345.

^o Tom. 2. p. 956. B.

^p Agatarchid. ap. Phot. c. 12. 19. 22. Solin. c. 30. p. 40. G.

greater than theirs, when they saw it on the descent of Magellan on one of their islands. At first they believed it to be a kind of animal, that fixed itself to, and fed upon wood. Some of them who approached too near being burnt, the rest were terrified, and durst only look upon it at a distance. They were afraid, they said, of being bit, or lest that dreadful animal should wound them with his violent respiration; for these were the first notions they formed of the heat and flame^q. Such too probably were the notions the Greeks originally formed of them^r.

The inhabitants of the Philippine and Canary islands were formerly as ignorant as those I have been speaking of^r. They assure us, that in the isle of Los Jordenas, the use of fire was lately unknown^r. They say the same of several nations in America^u, particularly of the Amikouans, a people of South America, discovered but a little while ago^x. Africa presents us, even in our own days, with some nations in this deplorable state of ignorance^y. For this reason, no doubt, there were some nations anciently^z, as there are some at present^a, who eat the flesh of animals quite raw. These facts may enable us to form a judgment of the savage and barbarous state of mankind after the confusion of tongues, and dispersion of families. I still except those of the posterity of Noe, who continued to dwell in the plains of Shinar.

It

^q Hist. des isles Mariannes par le P. le Gobien, p. 44.

^r See Plut. t. 2. p. 86. E.

^r Hist. gen. des voy. t. 2. p. 229.; Hornius de origin. Americ. l. 1. c. 8. l. 2. c. 9.

^t Ibid. That isle belongs to China.

^u Moeurs des sauvages, t. 1. p. 40.

^x Lettr. édif. t. 20. p. 224.

This nation dwells in a mountainous country, far from the sea, and where there are no navigable rivers. La Condamine, relat. de la riviere des Amazones, p. 106.

^y Mercure de France, Avril 1717, p. 62.

^z Herod. l. 1. n. 202. l. 3. n. 98. 99.; Arrian. Indic. p. 522. 566.; Arist. de mor. l. 7. c. 6. t. 2. p. 91. A.; Martini, hist. de la Chine, t. 1. p. 20.; Extrait des hist. Chinois.; Anc. relat. des Indes & de la Chine, p. 5. 15.; Euseb. praep. evang. l. 6. p. 274. B.

^a Voyag. de J. de Lery, p. 46.; Rec. des voyag. au Nord, t. 1. p. 226. 242. t.

It is hard to conceive how mankind could ever be unacquainted with fire, considering how many ways it discovers and presents itself to our eyes. How often do thunder and lightning bring down fire from heaven? The Egyptians^b say they owed their knowledge of it to an accident of that kind. Fire is often kindled by the fermentation of certain substances thrown in a heap, by the striking of flints, or rubbing of wood. The wind hath sometimes set reeds and forests on fire^c. It was to this the Phœnicians ascribed their discovery of fire^d. Vitruvius is of the same opinion^e. In a word, without speaking of vulcanos, we see fires kindled by nature, in almost every country^f. In some places of Italy^g, and elsewhere^h, the earth sets fire to any combustible matter that is laid upon its surface. In the province of Kamsi in China, there are burning wells, where the inhabitants dress their victuals by suspending their pots over the mouths of themⁱ. There are the like in Persia, where the ancient sovereigns of that country erected their kitchens^k. In several countries there are springs of water so hot, that the inhabitants boil their meat in them,

8. p. 174. 223. 378.; Lettr. édif. t. 4. p. 71. 72. t. 23. p. 239. t. 26. p. 286.; Jour-
des scav. Juillet 1679, p. 111.; Merc. de France, Avril 1717, p. 62. Fevr. 1719,
p. 42.; Rec. des voyag. de la comp. des Ind. Holland. t. 1. p. 579. t. 4. p. 579.
586. t. 5. p. 38. 101. 172.; Voyag. de Pyrad, part 2. p. 187.; Voyag. de Coreal,
t. 1. p. 162. 231.; Voyag. à la baye d'Hudson, t. 2. p. 29.; Hist. gen. des
voy. t. 11. p. 26.; Laet. descript. des Ind. Occid. l. 6. c. 17. p. 219. c. 26. p. 233.

^b Diod. l. 1. p. 17.

^c See Sanchon. apud Euseb. p. 35. A.; Thucyd. l. 2. n. 77. p. 147.; Lucret.
l. 1. v. 896. &c. l. 6. v. 1097. &c.; Virtuv. l. 2. c. 1.; Diod. l. 3. p. 217.; Plin.
l. 12. sect. 42. p. 669.; Suid voce *Δεγμῶς*, t. 1. p. 629.; Mem. de Trev. Jan.
1749. p. 129.

^d Sanchon. apud Euseb. p. 34. D.

^e L. 2. c. 1.

^f Physique de Rohault, vol. 2. p. 237.; Journal des scav. Avril 1685. p.
104.; Colonne, hist. nat. t. 1. c. 4.; Hist. nat. de l'Islande, t. 1. p. 8. 9. 10.;
Mem. de Trev. Jan. 1702, p. 9.; Merc. de France, Octob. 1726, p. 2249. 2254.
Decemb. 1732, p. 2866, Jan. 1733, p. 129. Fevr. p. 34.

^g Mem. de Trev. Octob. 1708, p. 1753.; Academ. des scienc. année 1706,
M. p. 336.

^h Piganiol de la Force, descript. de la France, t. 5. p. 12.

ⁱ Hist. de la Chine, par le P. Semedo, p. 30.; Martini, Atlas Sin. p. 37.;
Colonne, hist. nat. t. 1. p. 377.

^k Arist. de mirab. auscult. p. 1153. 1163.

only by immersion, without a pot or any other vessel¹. It has happened, and it still happens sometimes, that subterranean fires breaking out in the midst of forests, woods, or copices, set them on fire, and burn them^m. If there was a time then, when the greatest part of mankind were ignorant of the use of fire, this was not owing to that element's concealing itself, but to their not knowing how to use it, how to have it at pleasure, how to transport it, and how to rekindle it when it was extinguished. All nations have carefully preserved the names of those to whom they believed themselves indebted for so useful a discoveryⁿ. They considered them as the inventors of arts^o, because in reality there is hardly any art that can dispense with the use of fire.

We may form very probable conjectures about the methods which men at first used to procure fire, when they had occasion for it, from ancient traditions, and from the present practices of the savages. They could not be long in discovering, that, by striking two flints each against other, there went sparks from them. They made good use of this discovery^p, but they could not always find flints for this purpose. Necessity, the mother of arts, soon taught them how to supply the want of them. They remarked, that, by rubbing two pieces of hard wood very strongly against each other, they raised sparks, nay, that, by rubbing for some time two pieces of rotten wood, they raised flame. These discoveries were sufficient to teach these first men how to procure fire when they pleased. The Phœnicians related that the collision of trees had made the discovery of fire^q. The Chinese say, that Sui-gin-schi, one of their first kings, taught them how to kindle fire by rubbing two pieces of wood strongly against each other^r. The

¹ Journ. des scav. Mai 1665. p. 73; Hist. nat. de l'Islande, t. 1. p. 28. &c.; Geographie de Varenus, t. 2. p. 374. edit. de Paris, in 12. 1755.

^m Strabo, l. 12. p. 812.; Merc. de Franc. Juill. 1723. p. 223.; Acad. des scienc. t. 1. p. 426.

ⁿ See Sanchon. apud Euseb. p. 34. D; Diod. l. 1. p. 17. l. 5. p. 381.; Martini, hist. de la Chine, t. 1. p. 21; Hygin. fab. 144.; Paus. l. 2. c. 19.

^o Sanchon. Diod. Hygin. Paus. *locis cit.*

^p See Plin. l. 7. sect. 57. p. 415. ^q Sanchon. apud Euseb. p. 34. D.

^r Martini, hist. de la Chine, t. 1. p. 21.; Essai sur les hieroglyph. des Egypt. p. 448.

Greeks had nearly the same tradition ^t. It is to this day the most common method practised by the savages ^t.

Persons who had so little knowledge as these first men, could not procure themselves either great plenty, or very proper food. Every one went his own way, to gather the fruits and herbs which grew in the woods and fields ^u. They eat without any dressing, what the earth produced without any cultivation ^z. If we peruse the annals of all nations, even of those who were afterwards the most polite and learned, nothing can be more wretched and deplorable than the descriptions they give us of their primitive manner of life. The Egyptians originally lived on the roots and herbs which grew in their fields and marshes, without any other way of distinguishing them but by the taste ^v. The Greeks in like manner, in these first ages, fed on roots and wild fruits ^z. Acorns seem to have been their chief support ^a. There was a custom established at Athens to recall the memory of these ages of ignorance and rusticity. They presented to the new-married pair, on the day of their nuptials, a basket of acorns mixed with bread ^b. We must not however confound that kind of acorns on which the Greeks and other nations lived ^c, with those which are common in our woods. These last are too bitter and unsubstantial, ever to have furnished proper food for man. The acorns so often mentioned in ancient traditions, were of a very different quality. They very much resembled chesnuts, both in taste and flavour. There are such grow and are eaten at present in the

^t Plin. l. 4. sect. 22. p. 212; Solin. c. 11. p. 22. D.; Acad. des inscript. t. 3. M. p. 385.; Tournefort, voyag. du Levant, t. 1. p. 244. 245.

^u N. relat. de la France equinox, p. 178 179.; Hist. de la Virginie, p. 313.; Hist. nat. de l'Islande, t. 2. p. 201.; Voyag. de Dampier, t. 1. p. 143.

^u *In medium quaerebant*. Vir. geor. l. 1. v. 127. Lucr. l. 6. v. 937. 938.

^z See Strabo, l. 13. p. 885.; Vitruv. l. 2. c. 1. Athen. l. 1. p. 12. D.; Diod. l. 1. p. 11. l. 2. p. 151.; Ovid. metam. l. 1. v. 103. fast. l. 4. v. 395.; Æl. var. hist. l. 3. c. 39.; Plut. t. 2. p. 158. A. p. 393. E.; Macrobi. de som. Scip. l. 2. c. 10. p. 153. Extrait. des hist. Chin.; Martini. hist. de la Chin. t. 1. p. 20. 32; Hist. des Inc. t. 1. p. 17.

^v Diod. l. 1. p. 52.

^z Paus. l. 8. c. 1.

^a Virg. georg. l. 1. v. 147. &c.; Lucret. t. 5. v. 1415.; Plin. l. 7. sect. 57. p. 412.; Paus. l. 8. c. 1.

^b Potter's archeolog. l. 4. c. 18.

^c Strab. l. 10. p. 825. l. 15. p. 1066. 1069. l. 16. p. 1116.; A. Gell. l. 5. c. 6. p. 312.

South of Europe ^d. I imagine too, that under the name of acorns, the ancients comprehend several kinds of shell-fruits, as chesnuts, walnuts, &c. ^e.

There are still some traces of this ancient manner of life to be seen in several countries. Herodotus speaks of a nation in India that lived on herbage ^f. Agatarchides ^g, Diodorus ^h, Strabo ⁱ, and some others ^k, mention whole nations who subsisted entirely on roots and plants. Modern travellers give an account of several nations who still live in the same savage manner ^l.

Woods, seas, and rivers furnished also some provisions to the first men, according to the climates they inhabited. It is probable, that, in these ages, they made no distinction among animals ^m. Like the savages, they eat insects, reptiles, and such creatures as at the very sight of which we are apt to shudder ⁿ.

Let us add to these testimonies the authority of ancient customs, the faithful representatives of the primitive state of mankind. There has always been a great conformity between

^d See Strab. l. 3. p. 233.; Plin. l. 16. sect. 6.

They use this kind of acorns at all tables at this day in Spain. They eat them roasted like our chesnuts. It was thus the Greeks used them formerly. See Plat. de rep. l. 2. p. 601. A.; Plin. l. 15. sect. 25.; Suid. voce Ἐμμεντα βαλαν, t. 1. p. 719.

^e See Porphy. de abst. l. 2. p. 128.; Paus. l. 8. c. 2.; Isidor. origin. l. 17. c. 7. p. 148.; Mem. de Trev. Juin. 1718, p. 1132.

^f L. 3. n. 100.

^g Apud. Phot. c. 22. 23.

^h L. 3. p. 191.

ⁱ L. 11. p. 781. & 798. l. 16. p. 1116. l. 17. p. 1177.

^k Lucret. l. 5. v. 16. & 17. l. 6. v. 932. &c.; Bibl. anc. & mod. t. 22. p. 21.

^l Asia di Barros, deca 1. l. 1. fol. 18. verso.; Pietro d'ella Valle, lettre 11. p. 414.; Voyag. de Damp. t. 1. p. 292. t. 2. p. 134. & 156.; Gemelli, t. 2. p. 292.; Lettr. édif. t. 7. p. 42. t. 10. p. 190. t. 11. p. 82. t. 17. pref. p. 26. t. 18. p. 214. & 246. t. 25. p. 201. t. 23. p. 384.; Voyag. des Holland. t. 4. p. 386.; Voyag. de Benjamin, p. 56. 57.; Merc. de France, Juillet 1726, p. 1640. Juin 1755, t. 1. p. 141.

When I say with ancient writers, that the first men lived on roots and vegetables, I mean not to affirm that they eat no flesh, but only that it was not their chief food.

^m Diod. l. 1. p. 52.; Acoft. hist. nat. des Ind. l. 7. c. 2.

ⁿ The savages eat rats, toads, serpents, insects &c. See Hist. des Inc. t. 1. p. 300. t. 2. p. 216.; Geograph. Nub. p. p. 22.; Asia di Barros, deca 1. l. 1. fol. 18.; Rec. des vpyag. de la compag. des Ind. Holland. t. 5. p. 169. & 172. Rec. des voyag. au Nord, t. 8. p. 174.; Lescarbot, hist. de la N. France, p. 751.; Voyag. de Carpin, p. 37.; Voyag. de Coreal, t. 1. p. 175. & 232.; Voyag. d'Ovington, t. 2. p. 274.

the ordinary food of men, and their sacrifices. They have always offered to the gods a part of those things which were the chief support of their own lives. In the first ages, herbs, fruits, and plants, were their only offerings*. The Egyptians, when they went to their temples to perform their devotions, carried a handful of the herb they called *Agrostis*, in remembrance of the great use it had been of to their ancestors†. There was a time too, when all their libations were of water. Wine was not then discovered‡. They came by degrees to offer honeyⁱ, milkⁱ, oilⁱ, wineⁱ, flourⁱ, and at last animals, when these were become their ordinary foodⁱ. As they were ignorant in these ages of the art of seasoning their meat with salt, the custom was continued of putting no salt on the intrails of the animals offered in sacrifice².

Wretched and coarse as the food of these first men was, they were not in a capacity to procure it in sufficient quantities. For want of proper instruments and necessary skill, they must needs destroy and waste a great deal of their fruits and plants; like the savages who cut down the tree when they want to pull its fruit³. Besides, they had no suitable arms for hunting, nor tackle for fishing. Sticks and stones were the only weapons at that time⁴; and even afterwards, when they had invented arrows and pikes, they knew of no other way of arming them, but with pointed reeds, flints, or fish-bones. We may judge of the circumstances of these first men in this respect, by

* Theophr. apud Porphy. de abst. l. 2. p. 156.; Euseb. praep. evang. l. 1. c. 9. p. 28.; Bianchini, istor. univ. p. 156.

† Diod. l. 1. p. 52.

‡ Theophr. loco cit.; Hygin. poet. astr. l. 2. c. 29.; Bianchini, p. 307.

ⁱ Theophr. apud Porphy. de abst. p. 156.; Plato de legib. l. 6. p. 875. C.; Plut. t. 2. p. 672.

ⁱ Ovid. fast. l. 4. v. 369.; Plin. in praefat. p. 3.

ⁱ Theophr. loco cit.; Gen. c. 28. v. 18.

ⁱ Theophr. loco cit.; Gen. c. 14. v. 18.

² Plato, Plin. locis cit.

³ See Porphy. de abst. l. 2. p. 125. &c.

⁴ Athen. l. 14. p. 661. A.

⁴ Voyag. de Damp. t. 4. p. 185. & 186.; Lettres édif. t. 11. p. 315.

They do this probably because they know no better way of gathering the fruit; and as they change their place of residence so often, they give themselves no concern about the interest of their successors.

⁴ Hygin. fab. 274.; Diod. l. 1. p. 28.; Cedren. fol. 19.

those of several nations, mentioned both by ancient^c and modern^d authors. In these first ages too, they knew not the way of fishing with nets, an art which no savages are acquainted with^e. They made use of lines^f, with hooks made of wood, fish-bones, and other rude materials^g. In a word, they knew nothing of the art of breeding and feeding flocks, or of laying up any provision against a future scarcity.

It is not at all surprising, that having only such precarious resources, they often found themselves exposed to all the horrors of famine. It is to these terrible extremities, I am persuaded, we must ascribe that shocking practice, of devouring each other, which in ancient times prevailed in several places. That there was a time when some men were so horridly savage, as to make human flesh their food, is a fact so well attested, as to admit of no dispute^h; a fact confirmed by the example of several modern nationsⁱ in both worlds, to whom this kind of food is still familiar. There are people both in Asia^k, Africa, and America^l, who hunt men as we do wild beasts. They endeavour to take them alive, carry them to their huts, and kill them when they find themselves pressed with hunger. It is, I repeat it, the want of food that has been, and still is the occasion of these horrors^m. History furnishes us with too many examples of the direful effects of

^c See Arrian. Indic. p. 565.; Agatarchid. apud Phot. p. 1333.; Diod. l. 3. p. 185. & 191.; Tacit. de mor. Germ. n. 46.

^d Lescarbot. hist. de la N. Franc. p. 773.; Rec. des voyag. au Nord, t. 8. p. 175.; Lettres édif. t. 1. p. 132. t. 7. p. 43.; Voyag. de Dampier, t. 1. p. 94. t. 2. p. 142.

^e Relat. de la France equinox, p. 156.; Voyag. de Dampier, t. 2. p. 142.

^f Sanchon. apud Euseb. p. 35. C.

^g See hist. nat. de l'Islande, t. 2. p. 204. &c.; Voyag. de la baye d'Hudson, t. 2. p. 23.; Rec. des voyages qui ont servi à l'établissement de la compagnie des Indes Holland. t. 4. p. 560. t. 1. p. 578. t. 5. p. 37.; Hist. des Incas, t. 1. p. 82. 83.; Voyag. de J. de Lery, p. 170. 171.

^h See *supra*, book 1. p. 3. & 59.

ⁱ See *ibid.* p. 4. ^k Merc. de France, Avril 1717. p. 65.

^l Lettres édif. t. 10. p. 231. t. 23. p. 344. t. 25. p. 9.; Lescarbot, hist. de la Nouv. France, p. 857.; Voyag. de Coreal, t. 1. p. 162. & 228.; Mem. de Trev. Février 1702, p. 91.

^m See l'hist. des Incas, t. 1. p. 253. 255. 283. 300.; Voyag. de la baye d'Hudson, t. 2. p. 117.

famine, even in civilized nations ^a. Nay, in this deplorable extremity, mothers have been known to devour their own children ^o; and it is sufficient to reflect upon those sensations with which some sailors reduced to the last extremity, have found themselves to be sensibly affected, to have an idea of what man is capable of in those cruel moments ^p. Man-eating therefore would not be entirely laid aside, till mankind had found out methods of securing a subsistence; and if this horrible practice still subsists among some nations, it is an effect of the ignorance and barbarity of their ancestors ^{*}.

These first men being so little acquainted with the nature and use of fire, could not dress and prepare their food in a proper manner. They contented themselves with gathering a few roots or herbs, rubbing them between their hands, or bruising them between two stones, and then exposing them a little to the heat of the sun. They managed much in the same manner their flesh and fish, when they were so fortunate as to find any. Agatharchides ^q, Arrian ^r, Diodorus ^s, Strabo ^t, Pliny ^u, and even some modern relations ^x, speak of nations who had no o-

^a See Diod. eclog. ex libro 36. t. 2. p. 528. 529.; Strab. l. 4. p. 308.; Olympiodor. apud Phot. p. 189.; Procop. de bello Goth. l. 2. c. 20.; Lescarbot, hist. de la Nouv. France, p. 60.; Hist. de la Virginie, p. 32.; Lettr. édif. t. 21. p. 165.; Voyag. de Carpin, p. 37.; Laët, descript. des Indes Occid. l. 4. c. 3. p. 107.

^o See 2 Kings c. 6. v. 28. 29.; Jerem. Lament. c. 4. v. 10.; Jos. de bello Jud. l. 6. c. 21.; Olympiodor. apud Phot. p. 189.

ⁱ See J. de Lery, voyag. du Bresil, p. 368.; Rec. des voyag. de la compagn. des Indes Holland. t. 4. p. 650.

^{*} Some authors have reported that there were formerly public markets for human flesh in some countries of Asia, Africa, and America. Anc. relat. des Ind. & de la Chine, p. 55. & 132.; Bibl. univer. t. 2. p. 384.; Hist. des Incas, l. 1. c. 12. p. 51.; Hist. gen. des voyag. t. 5. p. 97. 227. t. 4. p. 630.; Mercure de France, Octob. 1717, p. 84.; Laët, descript. des Ind. Occid. l. 5. c. 15. p. 166.

It appears very improbable to me, that a people so far civilized as to have public markets, would permit the bodies of their fellow-men to be exposed to sale in them; unless we could suppose that they had contracted such an appetite for this kind of food, that they could not relinquish it even when they could procure other more natural aliments.

^q Apud Phot. c. 12. 19. 22.

^r Indic. p. 566.

^s L. 3. p. 185. 189. 191.

^t L. 16. p. 1116. A. p. 1118. C.

^u L. 7. p. 374. lin. 18.

^x Asia di Barros, deca 1. fol. 18. verso.

other way of dressing their food, but by exposing it to the ray of the sun. Even after the discovery of fire, mankind were a considerable time before they hit upon proper and commodious methods of employing that element in the preparation of their food. We may judge of the foolish and bungling methods used by the first men, from those which modern travellers tell us are practised by some nations at this day.

The inhabitants of the *Insulæ Australes* discovered in 1615, knew no other way of roasting hogs but by putting red-hot stones into their bellies¹. There are several nations, who at this day discover no less ignorance in the manner of boiling their victuals. They pour water into the hollow of some rock, or great stone, and then throw burning coals, or stones made red-hot, into the water, which by this means is sufficiently heated to boil their meat². The difficulty and inconvenience of such methods made them endeavour to find out others more proper and easy. They contrived vessels for boiling water more commodious than rocks, or great stones. The savages of New France boil their water in a kind of wooden troughs, by putting stones heated in the fire into it, and changing them from time to time³.

Mankind must soon have been disgusted with these tedious and uncouth methods of preparing their food. They would naturally try to procure vessels, which receiving the impressions of the fire from without, would communicate it to the water within them. The point was to find materials, both common and easy to be wrought, and at the same time capable of resisting the action of fire so long as was necessary for boiling their meat. This was a discovery only to be made by many trials. We may be convinced of this by the following examples. The savages of Forbisher's Straits used a kind of boiler made of the skins of fish newly killed⁴. The inhabitants of the western islands of Scotland formerly used the skins of animals, newly

¹ Rec. des voyag. qui ont servi à l'établissement de la compagn. des Indes Holland. t. 4. p. 583.

² Hist. des isles Antilles, p. 17.; Relat. de la Gaspésie, p. 51.

³ Lescarbot, hist. de la Nouv. France, p. 805.; Mœurs des sauvages, t. 2. p. 87.; Acosta, hist. des Indes Occid. l. 3. c. 2. fol. 174.

⁴ Rec. des voyag. au Nord, t. 1. p. 220.

flayed, for the same purpose^c. The Ostiakes at this day dress their victuals in kettles made of the bark of trees^d. In Siam the common people have no other way of dressing their rice, but by putting it upon the fire in a cocoa shell; the shell burns while the rice is dressing, but the rice is done enough before the shell is quite consumed^e. The inhabitants of Amboyna and Ternate make use of bamboos, or hollow reeds, for the same purpose^f.

These were very defective and rude expedients. They required to be renewed every moment. Necessity, the mother of invention, soon taught them more commodious methods. What we read in the history of a savage nation, may suggest unto us, by what steps men arrived at the art of making more durable and commodious vessels. In the relation of a voyage to Terra Australis, we are told that the inhabitants of that country boiled their food in pieces of hollow wood, which they set upon the fire, and they prevented their burning by dawbing them with a fattish kind of clay^g.

It was some such practice as this that probably gave men the first idea of making earthen ware. This experiment having taught them, that there were some kinds of clay which would resist the action of fire, it was a natural and easy thought to take away the wood, and make use of the outward crust when sufficiently burnt and hardened. It is a remark of Plato's, that the potters art was exceeding ancient, because it did not require the use of metals^h. It is probable, that at first they knew not how to give their earthen ware that great hardness and varnish in which their great excellence consists. Their first vessels were like those of the savages, pieces of clay or fat earth dried in the sun, or baked in the fireⁱ. They

^c Respubl. five stat. Scot. & Hibern. divers. autor. p. 33. See also Herod. l. 4. n. 61.

^d Rec. des voyag. au Nord, t. 8. p. 43.

^e Hist. gen. des voyag. t. 9. p. 248.

^f Rec. des voyag. qui ont servi à l'établissement de la compagn. des Indes Holland. t. 3. p. 322; Chardin, t. 4. p. 171. 172.

^g Mem. for establishing a Christian mission in the third world, or Terra Australis, p. 15. & 16.

^h De leg. l. 3. p. 805. C.

ⁱ Mœurs des sauvag. t. 2. p. 87.

were quite ignorant of the art of varnishing these vessels with lead^k, an art which was discovered by a mere chance, as we shall have occasion to mention by and by^l.

The discovery and introduction of arts by degrees relieved mankind from many of those wants and calamities with which they had been oppressed, immediately after the confusion of tongues and dispersion of families. Their reunion, and especially the establishment of laws, contributed greatly to this happy change. When families were reassembled, they began to study the arts; but they never could have formed great states, or carried arts to much perfection, without some means of providing for the subsistence of great numbers in one fixed and settled place. This never could have been done but by the discovery of agriculture.

All nations have given the honour of this discovery to their first sovereigns. The Egyptians said, that Osiris made men desist from eating each other, by teaching them to cultivate the earth^m. The Chinese annals relate, that Gin-hoang, one of the first kings of that country, invented agriculture, and by that means collected men into society, who before had wandered in the fields and woods like brute beastsⁿ. The tradition of the Greeks, that anthropophagy ceased upon the discovery of honey, means the same thing, that men desisted from preying upon each other as soon as they found any other food^o. Ancient historians mention the great pains taken by Alexander the Great to instruct several barbarous nations he met with in the course of his conquests, in the art of agriculture^p. This has been done in America in our own time^q. It is with the same view, to prevent the horrors men may be driven to by famine, that all civilized nations take care to lay up provisions against a future scarcity^r.

^k Voyag. de Frezier, p. 70.

^l *Infra*, c. 4.

^m Diod. l. 1. p. 17.; Plut. t. 2. p. 356. A.

ⁿ Mart. hist. de la Chin. t. 1. p. 18.

^o Schol. Pind. ad Pyth. 4. v. 107. p. 219.

^p Strabo, l. 11. p. 786. 787.; Plut. t. 2. p. 328. C.; Plin. l. 6. sect. 25. p. 325.

^q Hist. des Incas, t. 1. p. 21. 300. 301.; Nouv. relat. de la France equinox; p. 23.; Lettr. édif. t. 2. p. 179.

^r See Gen. c. 41. v. 35. &c.; Hist. des Incas, t. 1. p. 21. 192. 237. t. 2. p. 94.

The reunion of families and institution of political society, by giving birth to arts, procured to mankind all the conveniences and sweets of life. All political societies, however, have not made equal improvements in the arts. These have been carried to different degrees of perfection by different people. It will be proper to explain this a little.

At the commencement of societies, their first care would be to provide the necessaries of life. But the means of doing this would be more or less perfect according to the climate and genius of the different people. In some countries they would begin by improvements in the arts of hunting and fishing[†]. Hunting especially, was the principal employment of a great part of mankind in the first ages of the world. They were obliged to this in order to defend their own lives against the assaults of wild beasts, as well as to procure subsistence[‡]. There are still a great many nations in both continents, whose whole employment is hunting and fishing[§].

But the more industrious and discerning part of mankind would soon observe, that amongst that innumerable multitude of animals which were spread over the face of the earth, there were some which lived in droves and herds, and were much more tame and tractable than the rest. They would endeavour to make themselves masters of these, to confine them in inclosures, to make them multiply that they might always have a sufficient number of them at their command. A great part of the world in these first ages, and for a long time after, derived their chief subsistence from their flocks[¶]. We know several numerous and powerful nations who at this day follow this way of life, and are furnished with every thing they stand in need of from their flocks and herds^{||}.

Men would next apply themselves to examine the produc-

[†] Sanchon. apud Euseb. p. 35. B.

[‡] See *infra*, book 6. c. 1.

[§] Nat. hist. de l'Island. t. 2. 221. t. 1. p. 283. ; Rec. des voyag. au Nord. t. 8. p. 16. t. 1. p. 8. ; Lettr. édif. t. 10. p. 200. 315. 316. t. 11. p. 376. t. 23. p. 222. ; Hist. des Incas, t. 1. p. 330. ; Voyag. de Frezier, p. 130. ; Voyag. de Damp. t. 2. p. 142. 143. ; Nouv. relat. de la France equinox, p. 26. ; Bib. univ. t. 3. p. 519.

[¶] Plato de leg. l. 3. p. 804. &c. ; Var. de re rust. l. 2. c. 1.

^{||} The Tartars, Arabians, &c.

tions of the earth. This, without any cultivation, presented them with a great many plants and fruits which afforded a very agreeable and substantial nourishment. They would begin their observations upon these, by distinguishing the best kinds, especially such as kept longest after they were gathered². They would next endeavour to find out the best ways of using them, to discover the arts of increasing their quantity and improving their qualities by cultivation. It is to the discovery of agriculture we are indebted for that prodigious number of arts and sciences we now enjoy. As long as mankind had no other way of subsisting but by hunting, fishing, and feeding their flocks, arts made but very little progress. This kind of life obliged them to remove often from place to place, and did not require the knowledge of many arts. Those nations who do not practise agriculture, have still but a very slender acquaintance with the arts and sciences. The cultivation of the earth obliged those who applied themselves to it, to fix in a certain place, and to find out the various arts they stood in need of.

C H A P. I.

Agriculture.

Agriculture consists of several branches. By this word we understand the art of raising all kinds of trees, plants, fruits, and grains. But as tillage is the most necessary and important branch of agriculture, we shall begin with it.

² Diod. l. 1. p. 12.

A R T I C L E

ARTICLE I.

Of Husbandry.

HUusbandry, or the culture of grain, is an art so toilsome, tedious, and complicated, and requires such great attention and such various knowledge, that it is no wonder it was so long unknown to the greatest part of mankind. It is difficult to conceive how men attained at first the knowledge of corn and other grains which are cultivated. We do not see at present any wheat, rye, barley, oats, or rice growing spontaneously on our commons. Are we to suppose then, that certain kinds of *herbage* which grow in all countries, include in them the essence and principles of all the kinds of grain which make our principal food at present? Shall we say, that culture makes them unfold their latent qualities, brings them to perfection, and at last, by reiterated efforts, raises them to wheat, rye, barley, oats? &c. Experience indeed has taught us, that culture renders some fruits much more beautiful and excellent than they naturally grow, nay brings them to so great perfection that they will hardly be taken for the same species. But it is ingrafting makes this great change in the nature of fruits; and this is an operation which cannot be performed on *grasses*. As to simple cultivation, it is a great mistake to imagine, that it can ever change the fundamental essence and species of grains. Some authors, it is true, have formerly advanced this^a; but the contrary is at present universally known and acknowledged^b. Grains were created such as they are at present. The ancients even tell us of some countries where corn grew spontaneously^c. And that we know not any climate at present that produces wild wheat,

^a Theophrast. hist. plant. l. 2. c. 3. & c. 5. l. 8. c. 6. de caus. plant. l. 4. c. 6.; Plin. l. 18. sect. 20. p. 111.

^b See acad. des sciences, ann. 1708. mem. p. 85.; Mercure de France, Fevr. 1730, p. 299.; Duhamel, traité de la culture des terres, p. 145.; Mem. de Trev. Mai 1714, p. 814.

^c Plato, in Menex. p. 512.; Arist. de mirab. auscult. p. 1154. A.; Theoph. hist. plant. l. 4. c. 5. p. 78.; Diod. l. 1. p. 17. l. 5. p. 331. & 384.; Strabo, l. 15. p. 1017.; Plin. l. 18. sect. 13. p. 108.; Syncell. p. 28. See also what Herodotus says of a kind of corn used in India, l. 3. n. 100.

rye, barley, or oats of itself, is probably owing to the want of diligent inquiry. Nay, if we may believe some modern relations, these grains grow naturally in some places at this day ^d.

Agriculture is one of those arts which the deluge did not destroy entirely. The scriptures tell us, that Noah understood and practised it ^e; and it is highly probable he would instruct his posterity in the knowledge of it. But the confusion of tongues, and dispersion of families, made this art to be forgotten by the greatest part of mankind. This discovery, however, was not entirely lost by those families who continued in the plains of Shinar, or near them. Some knowledge of husbandry too might be preserved by those families which settled early in countries where the soil was loose and light, and very fertile. All these conjectures are founded on history, which informs us, that the inhabitants of Mesopotamia, Palestine, Egypt, and perhaps China, applied themselves to husbandry in the very first ages. The knowledge of husbandry among the Babylonians was as ancient as their history ^f. We cannot doubt the great antiquity of this art in these countries. Moses tells us that Nimrod and Assur built several cities: it is impossible to imagine how they could do this, without the assistance of agriculture ^g. The Phœnician traditions, supported by scripture, represented husbandry as known among them in the remotest ages ^h. It is said, that Isaac, when he dwelt in Palestine, sowed and reaped an hundred-fold ⁱ. The Egyptians gave the honour of this discovery to Isis, and her husband Osiris ^k. Husbandry must have been very early known in that country. We see that Abraham in a time of famine retired into Egypt ^l. Jacob sent his sons thither to buy corn in the like circumstances ^m. The Chinese may dispute with any of these nations, the antiquity of their acquaintance with this art, for they pretend to have learned it from Chin-nong

^d Lescarbot, hist. de la N. France, p. 251. 255. & 261.; Lettr. édif. t. 11. p. 385. t. 25. p. 71.; Hist. nat. de l'Islande, t. 1. p. 250.; Laet, descript. des Indes Occid. l. 2. c. 1. p. 34.

^e Gen. c. 9. v. 20. ^f Berof. *apud* Syncel. p. 28. & 29.

^g Gen. c. 10. v. 10. 11. & 12. ^h Sanchon. *apud* Euseb. p. 36. C.

ⁱ Gen. c. 26. v. 12. ^k Diod. l. 1. p. 17. & 18.; Plut. t. 2. p. 356. A.

^l Gen. c. 12. v. 10. ^m Gen. c. 42. v. 2,

the successor of Fo-hi^a. However this may be, it was from these countries, no doubt, and some others, that the art of cultivating grain was brought in process of time into other climates. The Greeks, for example, said they learned agriculture from the Egyptians^b. The Romans believed this art had been brought into Italy from Africa and Greece^c.

It is not unlikely that some nations might make the discovery of this art themselves. Some of those families who in their savage and vagabond state had lost the knowledge of it, might come into districts where grain in small quantities grew spontaneously; they would naturally study to improve this gift of Providence. But it would be with great difficulty and by very slow degrees, that such a people attained this art without a master.

In the first place, they must have invented tools and instruments necessary for husbandry, and the number of these is considerable. The first husbandmen tilled the ground by mere strength of arm; their tools were extremely clumsy and imperfect^d. Such was the state of the Peruvians at the discovery of that country. They had no ploughs, nor beasts of burden. They turned the soil with a kind of shovel; and when it was properly prepared, dropt the seed into little holes made with the end of a stick^e. There are a great many nations even at this day, who know no better methods^f. The savages of New France till their grounds with a wooden instrument, not unlike the hoe of our vine-dressers^g; some do it with shovels^h, and others even with wooden hooksⁱ. The common instrument used by the negroes of Gambia for turning the earth, is a kind of wooden shovel, like their oars^j:

^a Martini, *hist. de la Chine*, l. 1. p. 32.; *Hist. gen. des voyages*, t. 6. p. 196.

^b Diod. l. 1. p. 34. l. 5. p. 385.

^c Festus, *voce* Libycus campus, p. 210, Cicero, t. 4. p. 478.

^d Diod. l. 3. p. 232. 233.; Plut. t. 2. p. 378. & 379.

^e Conquête du Pérou, t. 1. p. 47.; *Hist. des Incas*, t. 2. p. 83.

^f See *Hist. gen. des voyag.* t. 3. p. 117.

^g Lescarbot, *histoire de la Nouv. Franc.* p. 778.

^h Lettr. edif. t. 12. p. 10.

ⁱ Lescarbot, p. 834.; *Moeurs des sauvages*, t. 2. p. 76. & 106.; *Voyag. de Coreal*, t. 1. p. 33.

^j *Hist. gen. des voyag.* t. 3. p. 188. & 189.

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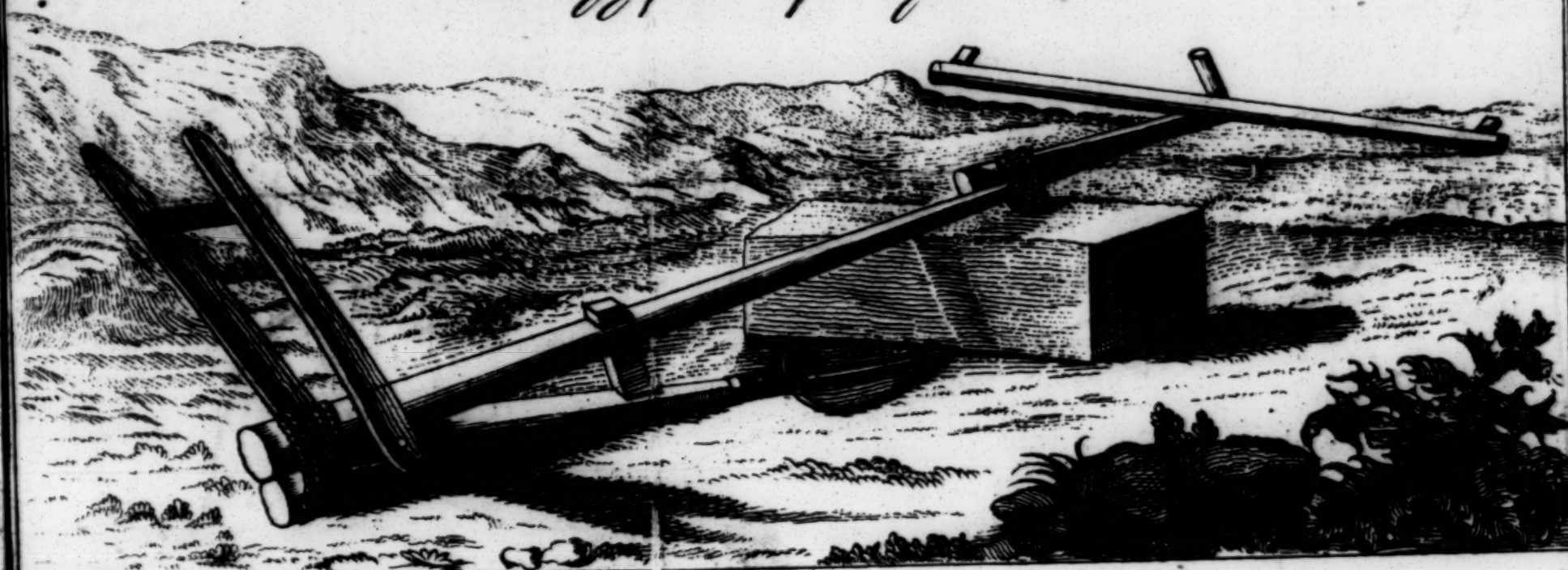
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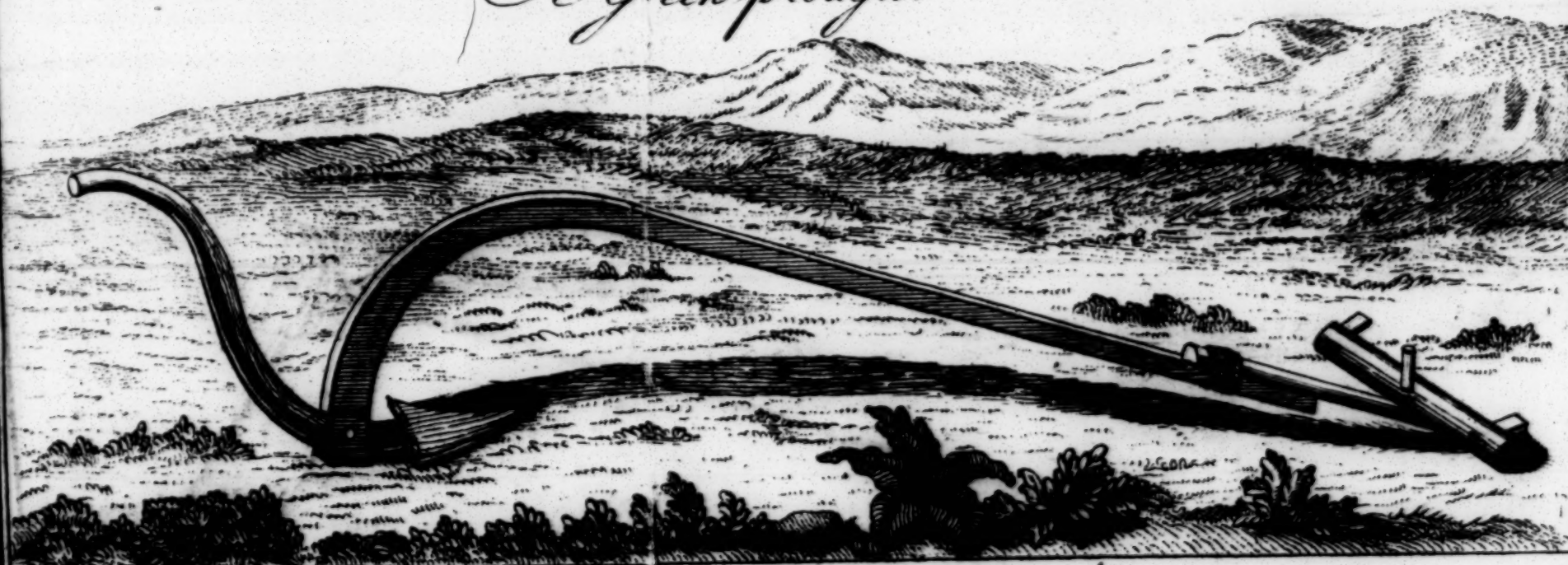
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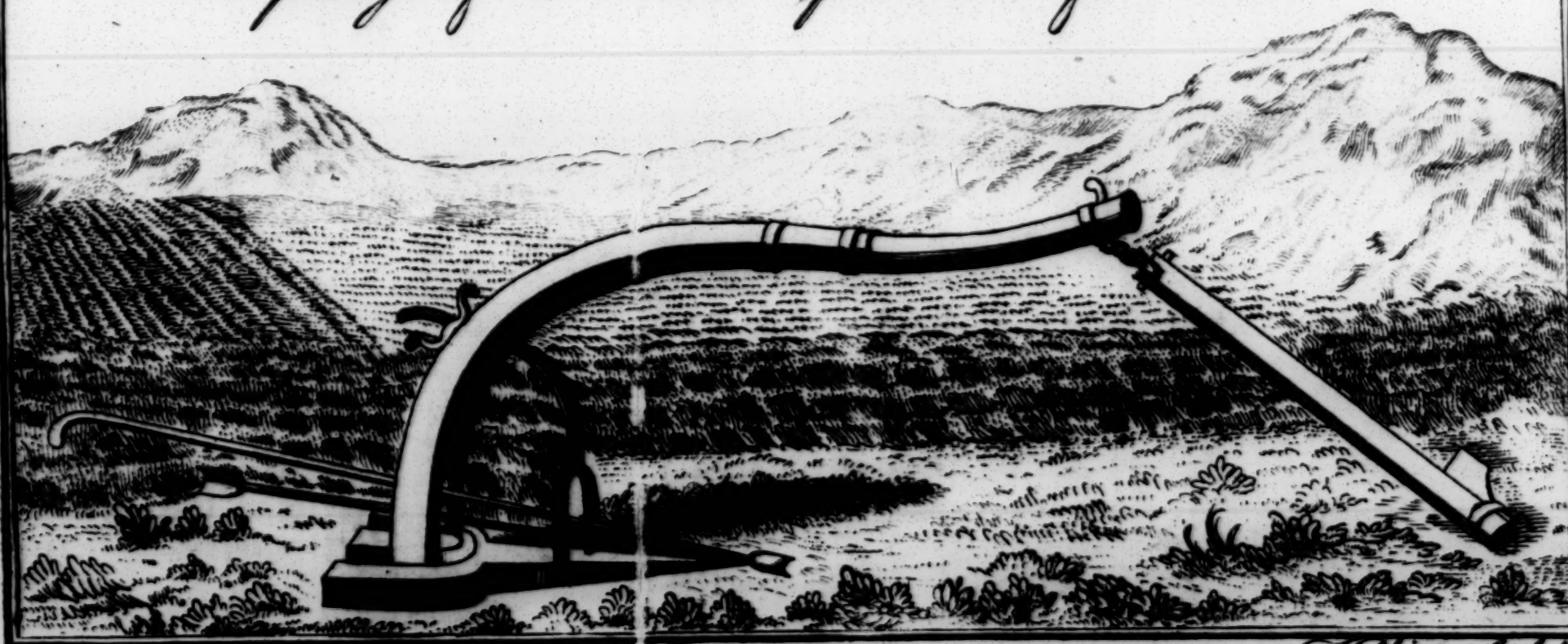
An Egyptian plough.



A Greek plough.



A plough of the Southern Provinces of France.



others have nothing but a sort of trowels ^z. The negroes of Senegal go five or six of them into a field, and turn the soil with their swords ^a. The original inhabitants of the Canaries performed this work with the horns of oxen ^b.

The people who used these bungling methods must have lost all traces of this art, otherwise they would have employed more commodious and more effectual instruments. Several nations in the very first ages after the dispersion were acquainted with machines, which, by turning up the earth in an expeditious and effectual manner, saved them much toil, and procured them far more abundant harvests. The plough was then undoubtedly used in some countries. We have a proof of this as to the Egyptians, in the worship paid by that people to the sacred bulls, whom they called Apis and Mneves. These well-known and very ancient rites of worship, were founded on the great services they believed these animals had rendered to those princes they esteemed the inventors of agriculture ^c. I have already said, the Egyptians believed they were indebted to Osiris for this art ^d. This prince was also regarded as the inventor of the plough ^e. They even said he had taught the Scythians to make use of oxen for tillage ^f. It appears from scripture that the practice of ploughing was established in Egypt in the time of Joseph ^g. It was as ancient in Palestine. The Phœnicians, the first inhabitants of that country, ascribed the invention of the plough to Dagon said to be the son of heaven ^h. We have just now mentioned, that when Isaac was in Palestine, he sowed and reaped an hundred-fold; a fact which necessarily supposes that the art of tillage was well known in that country. We see too, that, in the days of Job, they ploughed with oxen in Arabia ⁱ. In a word, the Chinese pretend that they received the plough from Chin-nong the successor of Fo-hi ^k.

The structure of the first ploughs was very simple. That machine, at present complicated enough, in some countries origi-

^z Hist. gen. des voyag. t. 5. p. 67. ^a Ibid. t. 2. p. 302. ^b Ibid. p. 229. & 252.

^c Diod. l. 1. p. 25. ^d *Supra*, p. 87.

^e *Primus aratra mazu solerti fecit Osiris.* Tibul. l. 1. eleg. 7. v. 29.

^f Eustath. ad Dionys. Perieget. v. 326. ^g Gen. c. 45. v. 6.

^h Sanchon. apud Euseb. p. 37. D. ⁱ Chap. 1. v. 14. See our dissertation.

^k Martini, hist. de la Chine, l. 1. p. 32.

nally consisted only of one beam of wood, so bent that the one end of it sunk into the ground, and they yoked the oxen to the other: it had no wheels; they had only added one handle, by which the ploughman directed and turned it as he pleased. Such was the ancient plough of the Greeks¹. Such at this day is that of the inhabitants of La Conception in Chili; their plough consists only of the crooked branch of a tree, and is drawn by two oxen^m. Ploughs were afterwards made of two pieces, the one long, to which they yoked the oxen; the other short, which served as a plough-share, for cutting the earth. These ploughs were still very simple, and had no wheels. We may judge of this by the description which the Chinese historians have given of that instrument, of which they believe Chin-nong the successor of Fo-hi was the inventor. They say, “That anciently men lived on fruits, plants, and the flesh of animals, without knowing how to plough or sow. But Chin-nong the successor of Fo-hi, observing the difference of seasons and of soils, cut down a piece of wood, which he called *Su*, to which he yoked oxen; he then bent and hardened in the fire another piece of wood, of which he made a plough-share; and thus he taught men to plough the ground.”

It is probable, that the Egyptians used a plough much of the same kind in the earliest times. We have a description of it in Hesiod^o. As the Egyptians taught the Greeks agriculture^p, it is natural to think they would teach them the form of their plough, which is used even to this day in some districts of the Higher Egypt^q. The Romans, for many ages, knew

¹ See Hesiod. op. v. 443. The Greeks called *ἄροτρον αὐτόγυον*.

^m Voyag. de Frezier, p. 70. ⁿ Extrait des hist. Chin.

^o Op. v. 443. The Greeks called this *ἄροτρον πικτόν*.

^p See part 2. book 2. sect. 2. c. 1.

^q See the figure of it in Norden's voyage to Egypt, t. 1. plate 56.

If we believe Herodotus, l. 2. n. 14. Ælian. hist. animal. l. 10. c. 16. Plin. l. 18. sect. 47. Plut. t. 2. p. 670. the Egyptians anciently did not plough their grounds. These authors tell us, that as soon as the inundation of the Nile was retired, every one sowed his field while it was soft and wet, and then turned a herd of swine into it, who pressed the seed into the earth with their feet.

This

knew no other kind^r. Such also are those used in the south of France, and in general in all hot countries^r. I shall only observe, that in the ages of which I am speaking, and even long after, they used no iron or other metal in their ploughs, as appears from the description Hesiod gives us of those of the Greeks^r. Strabo speaks of some nations who made use of ploughs entirely of wood^u. They do so in Mingrelia^x and several other countries at this day.

The form of their ploughs confirms an observation which I have already made, and which must not escape us, that tillage was invented by those nations which inhabited a light and loose soil. These soils, having no great depth or consistence, were easily turned; and the machines we have described, would be sufficient for that purpose. On the contrary, strong soils are naturally of a compact and solid texture; the parts of them will remain cold and without action, if they are not deeply ploughed and thoroughly separated. It is only by this means they can be penetrated by the action of the sun, and receive the impressions of the atmosphere. Hence the different form of ploughs.

The ancients made use only of oxen in tillage. The Greeks who speak of the ancient Bacchus as the inventor of agriculture^r, say he was the first who brought oxen out of India into Europe^z. We may infer, however, from a passage in Deuteronomy, that in ancient times they sometimes used asses

This fact, as it is related by these authors, has always appeared to me very suspicious. Hogs seem very unfit for this purpose, and more likely to devour the grain than to press it into the earth. Besides, it would be impossible for these animals to extricate themselves out of the mud, in which the sowers sunk to the knees. Maillet, descript. de l'Egypt, let. 9. p. 7.

I am persuaded, that Pliny, Ælian, and Plutarch speak only after Herodotus. For it is certain, from the testimony of Diodorus, l. 1. p. 43. and of Pliny himself, *loco cit.* and of modern travellers, that they did, and still do, plough their lands in Egypt. Herodotus probably never saw the Egyptian practice, and had mistaken the meaning of some more ancient writer. See *Les jugemens sur quelques ouvrages nouveaux*, Avignon 1745, in 12^o.

t. 10. p. 241. &c.

See Virg. georg. l. 1. v. 169.

^r See Lettr. édif. t. 12. p. 91.

^u Op. 1. 443. &c.

^u L. 11. p. 767.

^x Chardin, t. 1. p. 127.

^y Diod. l. 4. p. 249. l. 3. p. 232.

^z Plut. t. 2. p. 262. B.

for the plough. Moses forbids the Israelites to plough with an ox and an ass together ^a.

It was not enough to have sown grain, means must have been used to make it take root and grow. It must have been covered with the soil, that it might not want that nourishment which was necessary to make it grow and ripen. This was the intention of the harrow; a very useful, and very ancient instrument, since we find it mentioned in the book of Job ^b. The Chinese have even preserved the name of the person they believed to be the inventor of the harrow. They bestow very high commendations in their books on this invention, which was for a long time unknown to the Greeks, as I shall remark in the article of these people.

I must not conclude the subject I am now upon, without taking notice of the great pains which all civilized nations have been at to fertilize their grounds, and make them produce more than they would have done naturally.

In the first ages, after men began to cultivate the earth, they must have found it exceedingly fertile. Isaac having sown reaped an hundred-fold ^c. But this fertility could neither be general, nor of long duration. The soil exhausts itself by bearing. Men were soon obliged therefore to contrive methods for renewing it, and restoring those salts which are necessary to the production of grain. The ancients had several ways of fertilizing their lands. They employed dung, marl, salts, the ashes of certain plants, &c.

It is impossible to fix the precise time when men began to manure their lands designed for tillage. We discern only through the shades in which all ancient traditions are involved, that this practice must have been very ancient in some countries. Italy ascribed this invention to Saturn ^d. This means no more, but that this art was placed by the traditions of that people in the most remote antiquity.

It was with the same view that the Egyptians were at so much pains in watering their fields. This people inhabited a

^a Deut. c. 22. v. 10.

^c Gen. c. 26. v. 12.

^b C. 39. v. 10. See le P. Calmet.

^d Macrobian Saturn. l. 1. c. 7. p. 218.

climate naturally barren and ungrateful^e; but by dint of care and labour they rendered it the most fertile country in the ancient world. We know it had this character in the days of Abraham. This patriarch went thither to secure himself from that famine which desolated all the neighbouring countries^f. If we may even believe profane historians, the Egyptians had then executed very stupendous works, for rendering the river Nile of as great use as possible. Osiris, say they, inclosed that river on both sides with strong dykes, erected sluices in proper places for letting out the water upon the fields as they had need of it^g. They place the digging of the lake Moeris, for these purposes, nearly about the same time^h. There may be room for some doubts, perhaps, about the grandeur and magnificence of these works; but there can be none that the Egyptians in very ancient times had done great things for the improvement of their grounds. This is clearly enough intimated by Moses, when speaking to the Israelites of the promised land, he says, "The land whither thou goest in to possess it, is not as the land of Egypt, from whence ye came out, where thou sowedst thy seed, and wateredst it with thy foot as a garden of herbsⁱ."

The manner of reaping is a matter of great importance. The first men must have committed great waste, through want of skill, and of proper instruments. It would be long before they invented tools for cutting the ears of corn; at first they probably pulled them. There are some nations at this day who know no other method of reaping^k. The tediousness of this labour would put them upon contriving ways of shortening it. It would not be very difficult to invent some instrument fit for cutting several ears at once. The sickle, or

^e Voyag. d'Egypte, par Granger, p. 12. & 25. 26.

^f Gen. c. 12. v. 10.

^g Diod. l. 1. p. 23.

^h Ibid. p. 61. It is hard to determine the time in which Moeris reigned. All that we know, is, that Herodotus, l. 2. n. 101. 102. and Diod. l. 1. p. 62. make him more ancient than Sesostris; and the most probable opinion is, that Sesostris reigned about the year 1659 before Christ.

ⁱ Deut. c. 11. v. 10. & 15.

^k Hist. gen. des voyag. t. 3. p. 117.; Voyag. de Damp. t. 4. p. 228.

something like it, is extremely ancient. All old traditions speak of the sickle of Saturn¹, who is said to have taught the people of his time to cultivate the earth^m. It is true, this supposes the art of working metals, which in these ages was known to very few nationsⁿ. The others would supply this want by different contrivances. We may judge of this by what modern authors tell us of several nations. The people of Paraguay cut down their corn with cow's ribs instead of sickles^o.

It must have cost mankind much thought and many trials, to contrive an easy method of separating the grain from the ear. The most common practice of antiquity was to prepare a place in the open air, by making it very hard and smooth; on this they spread their sheaves, and then turned in oxen or other animals, and drove them backwards and forwards upon it for a long time. It appears, that this was the method used in Moses's time by the people of Asia and Egypt^p; it was also used by the Greeks^q, and several other nations^r. Others made use of heavy planks, stuck full of sharp pegs or pointed flints, which they dragged over the sheaves^s: this is practised by the Turks. Lastly, some bruised the ears by means of heavy carriages, such as carts, sledges, &c. This method seems to have been invented and practised by the inhabitants of Palestine^t. In Gascoigne and Italy they use carts and sledges for this purpose at present. In China they perform this work with a heavy roller of unpolished marble^u. All these methods are still in practice in most hot countries^x. They make no use of the flail in the east^y, where agriculture first began.

¹ Plut. t. 2. p. 275. A.; Macrobi. Sat. l. 1. p. 217.; Bannier, explicat. des fabl. t. 3. p. 429. 430.

^m Diod. l. 5. p. 383.; Macrobi. Sat. l. 1. p. 217.

ⁿ See *infra*, chap. 4.

^o Lettr. édif. t. 11. p. 420.

^p Deut. c. 25. v. 4.

^q Iliad. l. 20. v. 495. &c.

^r Ælian says, they rubbed the mouths of the oxen employed in this work with dung, to prevent their eating. *Histor. animal.* l. 4. c. 25.

^s See Scheuchzer, phys. sacr. t. 7. p. 241. col. B. § 2.

^t See Varron, de re rust. l. 1. c. 52.

^u Hist. gen. des voyag. t. 5. p. 459.

^x Ibid. p. 187.

^y Calmet, t. 4. part 2. p. 339.

The first way of cleaning grain after it had been separated from the straw, must have been by tossing up the grain and chaff together into the air several times; the wind carried away the chaff, while the grain fell to the ground by its own weight: they used for this purpose shovels or some such instruments. It is certain, that the winnowing fan was of great antiquity^z; but the fan of the ancients did not resemble ours. It is conjectured that it was made like a kind of shovel^a. Besides, this manner of winnowing grain is still practised in Italy and all hot countries^b.

ARTICLE II.

Of the art of making bread.

THE design and end of all the toils of husbandry is to procure bread. However common this aliment is at present, the art of preparing it was very rude in its beginnings, slow and various in its progress, like all other human inventions. Several nations who had corn, did not know for some time the secret of converting it into meal, or the meal into bread. How many vast countries are there in both continents, where, though they have grain, the use of bread is still quite unknown? It is even difficult to conceive how certain nations came to find out the extreme utility and various properties of corn. The difference between bread and that plant in its natural state, is prodigious. Yet nothing but the hopes of obtaining bread could have made whole nations apply themselves to husbandry, which is by far the most laborious course of life, and requires the greatest solicitude and attention. Accordingly there have^c been, in ancient

^z *Mystica vannus Iacchi*. Virgil. georg. l. 1. v. 166.

^a Odyss. l. 11. v. 125. See Madam Dacier's notes, t. 2. p. 479.

^b Calmet, t. 4. part 2. p. 341. ; Astruc, mem. pour l'hist. nat. de Languedoc, p. 354.

^c Herod. l. 4. n. 97.; Caes. de bello Gall. l. 6. n. 20.; Strabo, l. 11. p. 753. 754. & 781. l. 16. p. 1084. & 1115. l. 17. p. 1184. & 1190.; Tacit. de mor. Germ. n. 46.

times,

times, and still are ^d, many nations who never would submit to cultivate the earth. The inconveniencies of a wandering life appeared to them preferable to the sweets of a sedentary one, which could only be procured by means of agriculture ^e. Those nations then who submitted to the fatigues necessary for raising corn, must have known beforehand that that plant would reward all their toil, and furnish them with the most solid and agreeable food. This is, in my opinion, a fresh proof that some families, even after the dispersion and the confusion of tongues, had still retained some idea of the most useful arts.

We shall here lay before our readers the conjectures we have found in ancient writers, about the steps by which the art of making bread was again discovered by those families, who, in their wandering state, had lost all tincture of this and every other art. They began, say the ancients, with eating the grain as nature produced it, without any preparation ^f. According to Posidonius, a very ancient and eminent philosopher, this alone, if duly attended to, was sufficient to suggest the idea of converting corn into bread. They must have observed, says he, that the grains were first bruised by the teeth, then diluted by the saliva, and being wrought and kneaded by the tongue, went into the stomach, where they were properly heated to be converted into nourishment. On this model they formed the plan of making corn into bread fit for nourishment. They imitated the action of the teeth, by bruising the grain between two stones; they then mixed the meal with water, and by stirring and kneading that mixture, they formed it into a paste, which they baked by putting it un-

^d The Tartars, Arabians, and savages. See Merc. de France, Juin. 1755, vol. 1. p. 141.

^e See Tacit. de mor. Germ. n. 46.

^f Hippocrat. de prisca medic. c. 2. t. 1. p. 154.; Theophrast. *apud* schol. Hom. *ad* Iliad. l. 1. v. 449.; Suid. *voce* Οὐλοθυτ. t. 2. p. 738.; Coel. Rhodig. lect. antiq. l. 18. c. 38. p. 1037.; Several facts prove, that green grain can sustain life. See St Luke, c. 6. v. 1.; Lettr. édif. t. 17. p. 302.; Acad. des inscript. t. 16. H. p. 258.

der hot ashes, or some other way, till by degrees they invented ovens ^e.

Whatever becomes of this conjecture, we shall now describe the different operations made in the most ancient times upon grain, and the uses they put it to, according to the lights furnished us by antiquity. The practice of several nations in both continents at this time will assist us in judging of those of former ages.

I have said already, that there was a time when plants, herbs, and roots were the chief food of almost all the inhabitants of the earth. It is probable they broiled or boiled these plants and roots, as several nations do at present ^h. I am persuaded, that many nations originally knew no other way of dressing grain. They would begin by broiling the ears as soon as pulled while green and full of sap, on a clear and hot fire; then rubbing them between their hands, they separated the grain from the chaff, and eat it without any other preparation. This conjecture appears to me the more probable, that in Herodotus's time this was the practice of some nations in India ⁱ, and that, even in our own days, this is the practice of several savage nations in preparing their grain ^k.

But as the nations of whom I am speaking became civilized, this practice would be abolished. For as this kind of food would last only about a month, they lost the principal advantage of grain, which is its providing men with a certain and plentiful support from one harvest to another. These people therefore would naturally study how to make use of grain after it was ripe and dried. But it is probable they would make a great many trials before they hit upon any commodious method of converting this plant into an agreeable and proper aliment.

^e *Apud Senec. ep. 91. p. 409.*

^h See *l'hist. nat. de l'Islande, t. 1. p. 53.*

ⁱ *L. 3. n. 100. See also Levit. c. 2. v. 14.; Casaub. in Athen. l. 14. c. 16. p. 923.*

^k *Hist. de la Virginie, p. 246.; Voyag. de Frezier, p. 62.; Hist. gen. des voyages, t. 3. p. 167.* It is the custom of children in several countries at this day, to pluck ears of corn when near ripe, and after putting them a little in a clear fire, rub them between their hands, to detach the grains. The taste of these green half-roasted grains is not disagreeable.

It is impossible for men to live upon dry grain in the husk; they must therefore have studied several methods of preparing it. We find no practice so universal in ancient times as that of roasting grain. Almost all known nations have practised it¹, and the savages practise it at this day^m. What could be the reason of this? The most probable seems to me to be this. We have been told, that originally men made use of grain in its natural state. Of all the frumentaceous plants, if we believe the ancients, barley was the first that men fed uponⁿ. The grains of barley are involved in a certain husk or coat, of which it cannot be stripped but by the millstone. The far greatest part of these first nations knew nothing of mills. For want of this machine they made use of fire to detach the barley from its husk, which made it almost impossible to be eaten. They found this further advantage in this practice, that the fire communicated a kind of flavour to the barley. For this kind of grain, when half roasted, has not a disagreeable taste. In Ethiopia travellers commonly carry no other provisions with them but parched barley^o. When afterwards these nations came to grind their grain, this roasting of it was of great advantage. For many ages men knew no other way of grinding their grain, than by pounding it in mortars^p. The action of the fire upon the grain made it be more easily bruised and stripped of its coat^q.

We may reckon also amongst the first methods of preparing grain, that of steeping and boiling it in water, as they do their rice in the east. We know that the constant food of

¹ See Appollon. Rhod. l. 1. v. 1072.; Virg. georg. l. 1. v. 267.; Ovid. fast. l. 6. v. 693. l. 6. v. 313.; Plin. l. 18. sect. 2.; Festus *in voce* Ador, p. 8.; Servius *ad* Æneid. l. 1. v. 179.; Le P. Calmet, t. 2. p. 868. t. 4. part 2. p. 337.

^m Mœurs des sauvages, t. 2. p. 86.; Voyage de Frezier, p. 62.; Voyages de Dampier, t. 4. p. 228.

ⁿ Dionys. Halicarn. l. 2. p. 95.; Plin. l. 18. sect. 14. p. 108.; Porphyr. *de abstin.* l. 2. p. 128.; Paus. l. 1. c. 38.

^o Relat. de la haute Ethiop. p. 5.

^p See *infra*, p. 99.

^q See Acad. des scien. ann. 1708, mem. p. 67.

the Greeks^r and Romans^t in their first ages, was grain prepared in this manner, the water swelling and softening the grain so much as to make it easily eatable. This is still the method of many nations in preparing their grain^r. Perhaps, too, the better to strip it of its husks, they used to boil it a little before they roasted it. We meet with the traces of these ancient practices amongst the Kalmucks on the banks of the Irtis. Barley is their ordinary food. They steep it for some time in water, then press it to strip it of its coat, and set it upon the fire in kettles without water till it is well roasted. They eat it in handfuls for their daily bread^u.

Mankind were not long in discovering that grain wanted still further preparation. They soon observed that grain contained within its husk or coat, a substance which required to be disintangled. This suggested the idea of bruising or grinding. The first instruments used for this purpose, were only pestles and mortars of wood or stone. Nature pointed out these. The Greeks^x, Romans^y, and almost all nations^z, were a long time before they discovered any other method of making corn into meal. Many nations even in our days have no other machines for this purpose^a.

It is not easy to determine, with certainty, in what manner they made use of this kind of meal. Diodorus says, that the first inhabitants of Great Britain, after pressing the grains out of the ears, pounded them in a mortar, and so eat them; and these grains, thus pounded and bruised, were their principal food^b. We know that the Indians of Peru prepare their barley, by first toasting it, then reducing it to meal, and so eat it in spoons, without any further dressing^c. We do not know

^r Suidas *in voce* Διαβαν, t. 1. p. 515.

^t Traité de la police, l. 5. t. 2. p. 791.; Acad. des scienc. ann. 1708, mem. p. 86.

^u Voyag. de Frezier, p. 62.

^x Rec. des voyag. au Nord, t. 8. p. 191.

^y Hesiod. op. v. 423.

^z Plin. l. 18. sect. 3. & 23.; Serv. ad Æneid. l. 9. v. 4.

^a Plin. *loco cit.* sect. 23.

^b Hist. gen. des voyag. t. 3. p. 81. & 431.

^c Lib. 5. p. 347.

^d Voyage au Pérou par D. Ant. d'Ulloa, t. 1. p. 347.

whether the nations of antiquity used their pounded corn in this manner.

It is certain, that before men could make a proper use of grain, they must have found out the art of separating the meal from the bran. Yet I am persuaded that at first they eat both together, as some unpolished nations do still ^a. By degrees, however, they would endeavour to separate them, perhaps by passing their pounded corn through coarse sieves made of twigs, baskets of osiers, or the like, or perhaps even by winnowing it. All these methods are still used by the savages ^e. By degrees they improved these instruments. The Egyptians made their sieves or scarces of the filaments of the plant called *Papyrus*, or of the slenderest rushes ^f. The Greeks ^g used this last plant for the same purpose. The ancient inhabitants of Spain made theirs of thread ^h. The Gauls were the first who had the art to make them of horses hair ⁱ.

The first use they probably made of meal, was to mix it with water, and eat that mixture without any further preparation, as the people in the highlands of Scotland, and several others, do at this day ^k. By and by they thought of boiling this mixture. The most common dish the ancients made of meal, was a kind of hasty-pudding, boiled in earthen vessels, not unlike the *farro* of the Italians. This meal diluted with pure water, was the standing food of the ancients, which sometimes they dressed alone, and sometimes with meat when they could procure any ^{*}. They knew nothing of dressing them separately, and eating them together, as we use bread ^l. This way of using meal subsisted very long. It was in use among the Greeks, Romans, Persians, and Carthaginians ^m. The

^a Hist. gen. des voyag. t. 5. p. 137. See also Phist. des Incas, t. 2. p. 196.

^e Mœurs des sauvages, t. 2. p. 86. ^f Plin. l. 18. sect. 28.

^g Pollux, l. 6. segm. 74. ^h Plin. loco cit. ⁱ Plin. ibid.

^k Voyage de Frezier, p. 62.; Voyag. d'Egypte par Granger, p. 11.; Mercure de France, Juillet 1718. p. 87. 88.

^{*} This is what they called *Pulmentum* or *Pulmentarium*.

^l Mœurs des sauvages, t. 2. p. 83. 84. ^m Ibid. p. 84.

Pliny seems to contradict this in these words, *videturque tam puls ignota Graeciae, quam Italiae Polenta*. But the meaning, as Licetus well explains it, l. 18. sect. 19. is, that the Latins did not use the word *polenta*, nor the Greeks the word *puls*. *Repons. ad quaesita*, p. 57.

ancient inhabitants of the Canary islands were no less ignorant of the art of making bread. They eat their meal baked with meat and butter ^a. The savages make what we call their *Sagamite*, of Indian corn roasted in the ashes, pounded in a wooden mortar, and baked in an earthen vessel with all kinds of meat ^c.

Some of the ancients might have discovered pretty early the art of converting corn into meal; but that of converting meal into bread, in all appearance was not very soon found out. Yet till this discovery was made, it may be said, that mankind enjoyed but very imperfectly the advantages of grain, whose true and best use is to be converted into bread. It is hard to imagine by what steps they arrived at this discovery. They must have invented dough, that is, to mix a certain proportion of meal and water together, stir them strongly, and several times; they must have invented the art of baking, &c. We may believe it must have cost them many repeated trials before they discovered the art of converting meal into bread. But in whatever manner this discovery was made, it was exceeding ancient. The scriptures acquaint us, that Abraham served up bread to the three angels which appeared to him in the valley of Mamre ^r.

Their manner of making bread at that time was very simple. The ingredients were only meal and water, and perhaps a little salt. Their bread was not thick and raised as ours is at present; it was a kind of small flat cake, which they easily broke with their hands, and eat without a knife. Hence these expressions so frequently used in scripture, to *break* bread, the *breaking* of bread, &c^q. It appears further, that they did not knead their dough, and that they baked it immediately before they used it ^r, a practice which subsists still in several countries ^r.

They used but few precautions anciently in baking their bread. The hearth-stone commonly then served for this purpose.

^a Asia di Barros, deca 1. l. 1. c. 12. fol. 24. verso.

^c Moeurs des sauvages, t. 2. p. 86. 87. ^p Gen. c. 18. v. 6.

^q See Wafferus de antiq. mensur. l. 2. c. 5.

^r Gen. *supra*, & c. 19. v. 3.

^r Chardin, t. 1. p. 128. t. 4. p. 177.; Mem. de Trev. Septem. 1717, p. 1496. &c.

They

They laid a thin piece of dough upon this, covered it up with hot ashes, and let it lie till it was sufficiently baked ^a. It was in this manner Sarah prepared the bread which Abraham set before the angels ^b. It is thus several nations in America prepare their bread at present. They wrap their paste in leaves, cover it first with hot ashes, and above these with live-coal ^c. Sometimes they may use hollow stones, sufficiently heated, for this purpose. The practice of several modern nations leads us to think they did this. In some parts of Norway at this day they bake their bread between two hollow flints ^d. The bread of the Arabians is a kind of cake, which they bake between two stones made hollow for this very purpose, and heated in the fire ^e. The bread used by the savages of America, differs but little from that of the Arabians. It is a kind of thin cake, which they bake either between two stones very much heated ^a, or by laying their paste upon one hot stone, and covering it up with flints very warm ^b. The bread of the Tartars of Circassia is made of the meal of millet, kneaded with water into a soft paste, which they bake about half enough in earthen moulds, and eat very hot ^c. The bread of the greatest part of the nations of Africa is only meal kneaded with a little water, which they divide into small pieces, and bake on a stone ^d or in an earthen pot upon the fire ^e. They might perhaps anciently make use of a kind of gridirons, or frying-pans, in which they put their paste, and baked it over the fire ^f.

The invention of ovens however is very ancient. They are spoke of in the time of Abraham ^g. Some writers give the honour of this invention to one Annus an Egyptian ^h, a person entirely unknown in history. These first ovens, I imagine, were very different from ours. They were (as far as we can judge of them) a kind of baking-pans of clay or fattish

^a Ovid. fast. l. 6. v. 315.

^b Gen. c. 18. v. 6.

^c Hist. de la Virginie, p. 244.

^d Journal des sçavans, Nov. 1668, p. 87.

^e Calmet, t. 6. p. 326.

^f Lescarbot, hist. de la Nouv. France, p. 745.

^g Ibid. p. 337.

^h Rec. des voyag. au Nord, t. 10. p. 462.

ⁱ Hist. gen. des voyag. t. 3. p. 431. t. 4. p. 289. 352.

^j Ibid. t. 4. p. 289.

^k See Levit. c. 7. v. 9.

^l Gen. c. 15. v. 17.

^m Suidas *in voce* Αγρος, t. 1. i. p. 340.

earth,

earth, which they easily carried with them from place to place. We may imagine also that these first ovens were very much like those of the Turks, which are of clay, and resemble an inverted tub or bell. They heat them by putting fire in the inside, and then lay the paste formed into cakes on the top: as these cakes are baked, they remove them, and put others in their room ⁱ. All these different ways of baking bread which we have mentioned, still subsist in the east ^k.

We have no reason to imagine, that as soon as men discovered the art of making bread, they found out the secret of raising the paste. If there be any one discovery owing to chance, it is that of leaven. The idea of such a thing could not come into the mind of man naturally. The world was indebted to the œconomy of some person or other for this happy discovery, who, in order to save a little old dough, mixed it with the new, without foreseeing the utility of this mixture. They would no doubt be very much surprised to find that this piece of old dough, so sour and distasteful of itself, rendered the new bread so much lighter, more savoury, and easier of digestion. We do not know the precise time when leaven came to be used. It does not appear that the bread which Abraham presented to the angels was leavened. Sarah baked it as soon as she had mixed the meal and the water ^l. It is not at present the custom in the greatest part of Asia to ferment the paste ^m. The use of leaven however was very ancient, and must have been known before Moses. For when that legislator prescribes to the Israelites the manner of eating the paschal lamb, he forbids them to use leavened bread ⁿ; he observes further, that when the Israelites went out of Egypt, they eat unleavened bread, baked in the ashes, because, says he, they were thrust out of Egypt, and had no time allowed them to leaven their bread ^o.

It must have taken much time and much labour to reduce corn into meal in the mortar: this meal must also have been

ⁱ Belon, observat. l. 2. c. 115. p. 377.

^k See Thevenot, t. 2. c. 32. p. 544.; Chardin, t. 1. p. 128. t. 2. p. 93. t. 4. p. 177. 184.

^l Gen. c. 18. v. 6.

^m Gemelli, t. 1. p. 418.; Chardin, t. 4. p. 177. & 185.

ⁿ Exod. c. 12. v. 15.

^o Ibid. v. 39.

very coarse. I am persuaded, that the want of proper machines is the reason why several nations who have corn, do not make it into bread. But by little and little the arts improved. They must soon have discovered the utility of certain stones for crushing and grinding the grain. The rudest savages are not ignorant of this. They convert their corn into meal by means of two stones, the one fixed, the other turned about upon it by strength of arm, as our painters grind and mix their colours ^p. It is probable this was their method in the first ages. This was still very incommodious and toilsome. They would therefore endeavour to find out some more easy and expeditious way of grinding their grain. At last they invented the millstone and the mill.

It cannot be expected we shall ever be able to discover the exact time when mills were invented. There are so few circumstances recorded in history concerning this, and several other very ancient inventions, that it is impossible to fix the precise epocha of their discovery. I will not take upon me to affirm that corn-mills were known in Abraham's time, though I am inclined to think they were, from what Moses makes Abraham say to Sarah, "to knead three measures of fine meal ^q;" it is hard to conceive how meal can be made very fine without the use of the mill. But not to insist on this doubtful passage, Job ^r, who lived in the ages ^{*} we are now considering, speaks of the millstone. It is equally certain that the use of mills was very ancient among the Egyptians. Moses makes this evident enough ^t. He speaks also very plainly of these machines, when he forbids the Israelites to take the upper or nether millstone in pledge ^u.

Further, we are quite ignorant of the construction of these ancient mills. The millstones must have been very small, since they were easily turned by hand. This was one of the hardest and lowest drudgeries of their servants and slaves. Moses ex-

^p Voyag. de Frezier, p. 62. ; Lettr. édif. t. 23. p. 289. ; Hist. gen. des voyag. t. 8. p. 228. t. 3. p. 117. t. 4. p. 289.

^q Gen. c. 18. v. 6.

^r C. 41. v. 15. according to the Hebrew.

^{*} See our dissertation at the end of the last volume.

^t Exod. c. 11. v. .

^u Deut. c. 24. v. 6.

presses this clearly in speaking of the last plague of Egypt.
“ All the first-born in the land of Egypt shall die, from the
“ first-born of Pharaoh that sitteth upon the throne, even to
“ the first-born of the maid-servant that is behind the mill.”

We shall see in the following books, that neither the Greeks nor any other ancient nation had any other than hand-mills *.

Notwithstanding the great antiquity and utility of agriculture which procures us the most solid and agreeable aliments, the knowledge of it at first was very limited, and for a long time confined to a few countries. I am of opinion, that, in the ages we are now speaking of, husbandry was only known and practised in Chaldea, Palestine, Egypt, and a few provinces of China. The greatest part of Europe was for a long time unacquainted with this useful art. I shall take care, in the second part of this work, to point out the time when husbandry was established in Greece. Let us proceed to inquire into the discovery and progress of the other parts of agriculture.

ARTICLE III.

Of Drinks.

WE may reckon the cultivation of the vine, and the art of making wine, among the first branches of agriculture which were known to men. All historians, sacred and profane, agree in placing this discovery in the most distant ages. Noah cultivated the vine, and drank wine †. According to the Egyptian traditions, Osiris was the first who gave attention to the vine, and its fruit. Having discovered the secrets of planting and cultivating vines, and of extracting wine, he

* Exod. c. 11. v. 4. 5.

† See Calmet, t. 4. part. 2. p. 252.

‡ Gen. c. 9. v. 20. There is reason to believe wine was not known before the deluge, because Noah was surprised at the effects of that liquor.

communicated them to mankind *. The inhabitants of Africa say the same of the elder Bacchus *. We see too, that, in the remotest antiquity, their public worship chiefly consisted in offerings of bread and wine. Such was the thank-offering of Melchizedek king of Salem, and priest of the Most High, for the victory gained by Abraham †.

The properties of the vine, and the art of making wine, were naturally very obvious. The ancients knew ‡, and we know at this day §, several countries which naturally produce vines, whose fruit is very little inferior to those that are cultivated. Their grapes may not only be eaten, but they make pretty good wine ¶. It is not therefore difficult to conceive how the first men, by the help of a little reflection, might arrive at this branch of knowledge.

The consequence of this discovery would be their collecting the vines together, which before were mixed with other underwood, planting them in a proper soil, and on a regular plan. It was even easy to discover the art of cultivating vines. They require only to be dressed and pruned. There is no necessity of uniting different kinds of them by the graft and scutcheon, as is done with other fruit-trees.

We can only guess in what manner they made their wine in these remote ages. At first it is probable they squeezed the grapes with their hands. By degrees they would find out more expeditious methods. If we may believe profane historians, the wine-press is of very great antiquity. They gave the honour of this invention to the elder Bacchus *. It is certain that the use of it was known in the age of Job †; but we know not in what manner these machines were anciently made.

* Diod. l. 1. p. 19. The art of making wine must have been very ancient in Egypt. See Gen. c. 40. v. 9. &c.

† L. 3. p. 239.

‡ Gen. c. 14. v. 18. See what we have said above of the resemblance between mens ordinary food and their sacrifices, p. 78.

§ Diod. l. 3. p. 231. & 239. l. 4. p. 327.; Strabo, l. 15. p. 1017. C.

¶ Rec. des voyag. au Nord, t. 5. p. 40. t. 9. p. 143. 144.; Mercure de France, Septembre 1717, p. 131. & 140.; Hist. de la Virginie, p. 3. & 188.; Lescarbot, hist. de la Nouv. France, p. 562. 563.

* Authors cited above.

† Diod. l. 3. p. 232.

‡ C. 24. v. 11.

The invention of vessels proper for holding and keeping liquors commodiously, must have soon followed the discovery of wine. Men would at first make use of such as nature presents them with in all climates. There are several kinds of fruit, as the gourd, the calibash, the citrul, &c. which being dried and hollowed may serve very well for keeping and carrying liquors. The Egyptians ^a made much use of these, and they are the common vessels of the people of America at present ^b. Bamboos, a kind of reeds, are equally proper for this purpose. In several countries they supply the place of pails and casks ^c. The ancients imagined that the horns of animals were the first vessels used for keeping and drinking liquors ^d. The use of them was even continued very long by several nations ^e. The sacred oil of the tabernacle was kept in a horn ^f. Galen remarks, that at Rome they measured oil, wine, honey, vinegar, in vessels of horn ^g; and Horace speaks of them very plainly ^h. Cæsar says the inhabitants of the Hercinian forest used large cups made of the horns of the *urus* ⁱ. Pliny ascribes this practice in general to all the nations of the north ^j. Xenophon makes the same observation of many nations of Asia and Europe ^k. The ancient poets, Æschylus, Sophocles, and Pindar, always represent the first heroes drinking out of horns. These kinds of cups are still much used in Georgia ^l. Bartholin assures us, that in Denmark they formerly drank out of nothing but the horns of oxen ^m. In a great part of Africa, these are the only vessels used for keeping liquor ⁿ. Men were

^b Strabo, l. 17. p. 1151.

^c Hist. de la Virginie, p. 243.; Voyag. de J. de Lery, p. 82. & 278.; Acoffa, hist. nat. des Indes, fol. 167. v.; Voyage de V. le Blanc, part 2, p. 115. & 184.; Voyage de Dampier, t. 4. p. 189. 243.; Hist. des Incas, t. 2. p. 200.

^d Rec. des voyag. qui ont servi à l'établissement des Holland. t. 1. p. 254.; Hist. gén. des voyag. t. 8. p. 93.; Acoffa, hist. nat. des Indes, fol. 185. recto.

^e Athen. l. 11. p. 476.; Nonnus Dionys. l. 12. p. 338. v. 21. p. 348. v. 13.

^f 1 Sam. c. 16. v. 1.; Athen. l. 11. p. 468. & 476.

^g 1 Kings, c. 1. v. 39.

^h De composit. medicament. per genera, l. 1. c. 13. t. 12. p. 657. edit. Charterii.

ⁱ Serm. I. 2. satir. 2. v. 61. & 62.

^j De bello Gall. l. 6. c. 26. It is the wild ox.

^k L. 11. sect. 45. p. 614. Anabasis, l. 6. & 7.

^l Chardin, t. 2. p. 187.

^m Journal des scav. Nov. 1668. p. 89.

ⁿ Biblioth. raison. t. 1. p. 57.; Rec. des voyag. qui ont servi à l'établissement de la compagnie des Indes Holland. t. 1. p. 243. 244.

not long before they invented earthen ware, both for keeping and drinking their liquors ^γ. The Phœnicians, Greeks, and several other nations, made much use of them for keeping their wines ^z. Afterwards they found out a way of dressing the skins of animals, so as to make them fit for keeping liquors. The use of bottles is extremely ancient. When Abraham sent away Hagar, it is said he put a bottle of water upon her shoulder ^a. It appears from the book of Job, that bottles were the vessels most commonly used for keeping wine and other liquors in these remote ages ^b.

We may depend upon it, that, next to wine, beer was the most ancient and universal liquor. Beer was the most common drink of the greatest part of Egypt ^c. It was very early introduced into Greece ^d, and some parts of Italy ^e. The ancient inhabitants of Spain, Gaul, and Germany, knew it from time immemorial ^f. In a word, we find this liquor even among the first inhabitants of Peru ^g. The invention of beer is exceeding ancient, and ascribed to Osiris. Tradition bears, that this prince, for the sake of those people whose countries would produce no wine, invented a liquor made of barley and water, which was not inferior to wine either in strength or flavour ^h. This is an exact description of beer or ale. They pay the same compliment to the ancient Bacchus ⁱ.

If the discovery of wine seems to me simple and natural, that of beer surprises me beyond measure. I am still at a loss to conceive, how the idea and composition of this liquor occurred to the minds of these first men. We need only reflect a moment on the tedious process necessary to the making of

^γ Athen. l. 11. p. 483. & 500.; Porphy. de abst. l. 2. p. 151.

^z Iliad. l. 9. v. 465.; Herod. l. 3. n. 6. ^a Gen. c. 21. v. 14.

^b C. 32. v. 19. according to the Hebrew.

^c Herod. l. 2. n. 77.; Diod. l. 1. p. 40. & 41.; Strabo, l. 17. p. 1179.; Athen. l. 1. p. 34. B. l. 10. p. 418. E.

^d See part 2. sect. 2. c. 1. art. 2. ^e Strabo, l. 4. p. 310.

^f Diod. l. 5. p. 350.; Plin. l. 14. sect. 19. p. 729.; Tacit. de morib. German. p. 33.; Athen. l. 1. p. 16. C.

^g Hist. des Incas, t. 2. p. 196.

The beer of this people must have been different from ours, for they had neither barley nor wheat.

^h Diod. l. 1. p. 24.

ⁱ Id. l. 3. p. 242.

beer, to be convinced of the difficulty of the invention. First, the whole process of making the barley into malt, then the drying and grinding the malt in a particular manner, next the incorporating this with the water; which requires great kettles and furnaces for brewing this mixture of malt and water strongly together; last of all, a certain quantity of yeast must be put to it, to make the liquor ferment. This is a part of the operations necessary to making beer, and these operations require many machines. I suppose indeed, that the composition of this liquor was not originally so complicated as it is at present; there are however a great many operations essentially necessary to the making of it, and which they could not then dispense with, especially as all historians declare that it differed little or nothing from wine in strength and flavour*. In whatever manner they then prepared their beer, it could not be so wholesome as ours, because it had no hops. This plant which we put into our beer for correcting the faults complained of in the beer of the ancients, is greatly commended by physicians for its virtues.

I cannot on this occasion but make some reflections on the great thought and pains which mankind have taken in all ages, and in all countries, to find out some liquor more agreeable than water, more proper to strengthen the body, to cheer the spirits, and even to throw the mind as it were out of itself. The wildest savages have endeavoured to find out strong intoxicating liquors. When Virgil¹ describes a nation in the north, who regaled themselves with a liquor made from the fruit of the service-tree, he paints them as a people gay and frolicksome by means of that unpleasant drink. An enumeration of the several kinds of liquors which have been used in every age and climate, would be tedious. I shall only mention such as have appeared to me most singular in their composition, and most worthy of attention.

Though the arts of making wine and beer were discovered very early, yet in the first ages there were but few nations who

* Diod. l. i. p. 24.

¹ Georg. l. 3. v. 379.

were acquainted with them; a great many were long strangers to them, either through want of a proper soil for the growth of vines and grain, or more probably through want of skill in the cultivation of them. These nations then found it necessary to contrive some other liquor to supply the place of wine and beer. For, in general, men must and will have some other drink besides pure water. It is said, that several nations were originally accustomed to drink the blood of the animals which they slew, quite hot^a; a custom which continued long^b, and which still continues among some savages^c. This shocking custom, an effect of primitive barbarity, has yet some foundation in natural necessity. It was for want of some other artificial liquor, that they had recourse to this, which, it is pretended, greatly cherishes and strengthens nature^d. For those nations which still retain the custom of drinking the blood of animals, and even human blood^e, have no artificial liquors^f.

As mankind became civilized, they conceived an aversion to drinking blood, and endeavoured to contrive some artificial liquor to substitute in its place. They never succeeded in this but when they hit upon such a composition as fermented. For men really want that warmth which is occasioned by fermentation. Let us examine the composition of some of those liquors which have been used by the nations who had neither wine nor beer.

Mankind have always extracted their liquors from those things which served them for their food. Honey was very soon discovered; for though men had not the secret of collecting bees into hives, yet wild honey is so common, that they must always have had it in plenty. It was not long before they

^a Virg. georg. l. 3. v. 463; Martini, hist. de la Chine, l. 1. p. 27.

^b Strab. l. 16. p. 1121. l. 17. p. 1177.

^c Hist. nat. de l'Islande, t. 2. p. 251. 252. 266.; Asia di Barros, deca 1. l. 10. fol. 187.; Laët, descript. des Ind. occid. l. 6. c. 17. p. 219.; Voyag. à la baye d'Hudson, t. 2. p. 21.; Buffon, hist. nat. t. 3. p. 485.

^d Even at this day, those people who hunt wild-goats and shamoys upon the Alps, always drink the blood of the beasts as soon as they are killed. Having asked them the reason of this practice, they told me nothing was so strengthening as blood drunk hot.

^e Hist. nat. de l'Islande, t. 2. p. 252. 266.; Buffon, hist. nat. t. 3. p. 485.

^f Hist. nat. de l'Islande, t. 2. p. 252.; Buffon, loco citato.

composed a liquor of it. I have already taken notice of the relation there always was between the substance of mens food, and of their sacrifices^r. Plato says, that anciently men offered nothing to the gods but fruits rubbed with honey^s. Plutarch speaking of these ancient sacrifices, gives this reason for them. Before men knew the vine, says he, they had no liquor but honey diluted with water^t. This is what we call at present *hydromel*. Plutarch adds, that several barbarous nations in his time, who knew not wine, used this liquor, and that they corrected the flatness and insipidity of it, by some bitter and vinous roots^u. We learn from a number of other ancient authors, that the use of hydromel was very extensive^x. We see, even at present, the people of Abyssinia, Lithuania, Poland, and Muscovy, who have few vines, and a great deal of honey, make a liquor of this, by diluting it with water, boiling it a little, then fermenting it in the sun. This liquor is very strong, and not disagreeable. The ancients mention a great many other liquors which I shall pass over in silence.

If from the nations of antiquity we descend to those in modern times, we shall see, that even the most brutal savages have some artificial beverage. The Tartars extract from the milk of mares made sour, a kind of liquor almost as strong as brandy^y. The Moxes, the most barbarous nation of America, have the secret of making a very strong liquor of certain roots putrefied and infused in water^z. Others roast maiz to a coal, then pound it very fine, and boil it in large kettles full of water. This black and distasteful liquor gives them the highest delight^a. Though the composition of all these liquors is pretty extraordinary, yet I am going to speak of one more singular than all the rest. The description of it, I confess, is extremely disgusting. But it is so much the stronger proof of

^r Supra, p. 78.^s De leg. l. 6. p. 875. G.^t Sympof. l. 4. p. 672.^u Id. ibid.^x Diod. l. 5. p. 350.; Plin. l. 14. sect. 20. l. 23. sect. 29.^y Marco Polo, l. 1. c. 57.^z Lettres édif. t. 10. p. 194. 195.^a Ibid. t. 25. p. 195.

There are few accounts of America but mention this liquor, the composition of which, is much the same amongst all the savages of that part of the world.

the great efforts which men have made in all ages and countries, to procure some liquor less insipid than water.

The most common liquor among the savages of America, is what they call *chica*. This is their manner of making it. They infuse 20 or 30 bushels of maiz in a great trough full of water, till the water be well impregnated with the grain, and begins to sour; then a great number of old women chew some the plant, and some the grains of maiz, which they spit out into calabashes; when they have got a sufficient quantity of this odious mixture of maiz and saliva, they pour it into the trough, and it serves as yeast, raising a small fermentation in the whole mass. When this fermentation is over, they draw off the liquor clear, which has the taste of sharp small beer, and is extremely intoxicating. The savages value it highly, and are excessively fond of it^b. These examples on this subject, I suppose, will be thought sufficient. Let us proceed to the other parts of agriculture known in these first ages.

ARTICLE IV.

Of the art of making Oil.

OIL is at least as necessary to man, as wine, and other liquors of that kind. I do not know but in some respects it is more indispensably necessary. There are few arts which do not require the use of oil. For this reason the Greeks made Minerva who discovered the olive, to preside over all the arts. Accordingly we see that all nations have endeavoured to procure themselves oil, and to extract it from every substance they thought capable of yielding it. The invention and use of oil is of the highest antiquity. It is said Jacob poured oil upon the pillar he erected at Bethel, in memory of his dream^c.

^b Acofta, hift. nat. des Indes, fol. 162.; Voyag. de Dampier, t. 4. p. 228.; Voyag. de Frezier, p. 62.; Voyag. de J. de Lery, p. 124.; Voyag. des Holland. t. 2. p. 38.

^c Gen. c. 28. v. 18.

There are a good many plants and fruits from which oil may be made; but that which is extracted from the fruit of the olive-tree, is by far the most excellent. This discovery was not obvious. It was not easy to discover that olives would yield oil, but still more difficult to find out the art of extracting it. The invention of machines proper for this operation, requires much reflection and many trials. To extract oil from olives, they must first be reduced to a paste, by the help of the millstone, this paste must be put into large frails, and boiling water poured upon it; at last the whole must be pressed, and the oil which swims on the top collected with spoons. The consideration of all these operations might incline us to deny the first ages the knowledge of the oil of olives, and to doubt whether that which Jacob used was of this kind.

But, on the other hand, we find, that the olive was known and cultivated in the remotest times. The traditions of almost all ancient nations agree, that the olive was the first tree men learned to cultivate. The Egyptians believed they owed this discovery to the elder Mercury^d. The Atlantides said, that Minerva was the first who taught men to plant and cultivate olive-trees, and extract the oil of olives^e. This fact is the more probable, as the management of the olive is extremely easy, this tree hardly requiring any care^f.

It is also certain, that olive-oil was known in the days of Job^g; and by the manner in which Moses speaks of it, we may perceive plainly, that it was much used in his time^h. There is no room therefore to doubt, that many nations, in these first ages, knew the art of extracting oil from olives. But it does not appear that they made use of the same machines in that operation which we have at present. The press, particularly, was not known then. They pounded the olives in mortars to extract their oilⁱ.

Further, if we will believe the ancient tradition of the Atlan-

^d Diod. l. 1. p. 20,

^e Idem, l. 5. p. 389.

^f Virg. georg. l. 2. v. 420.

^g Gen. c. 24. v. 11. according to the Hebrew.

^h Exod. c. 27. v. 20. c. 23. v. 11.

ⁱ Exod. c. 27. v. 20.

tides, that people knew very early the secret of rendering olives eatable. They gave the honour of this discovery to Minerva^k. It must be owned, that the softening the bitterness of olives, by the means of brine, is a very subtle invention.

Our being accustomed at present to obtain oil with ease, is the reason we are not sensible of all the merit of the first discovery. To be convinced of this, we need only reflect upon the immense profits the Phœnicians made by the oil they imported into Spain in their first voyages^l. They formerly set so great a value upon this liquor, that the laws of the ancients expressly forbade the olive-gatherers to beat the trees, or break any of their branches^m. It is not surprising that the ancients took so much care of these trees; their oil was exceedingly precious to them, they consumed vast quantities of it, and put it to many more uses than we do at present.

One of the most valuable properties of oil, is that of its giving a clear and lasting light, by means of any inflammable matter dipt in it. Without doubt all nations have sought the means of dispelling darkness. To procure light amidst the gloomy shades of night, was probably one of the first objects which employed the thoughts of men. But an easy and commodious method of doing this was not so soon found out. It is probable that originally they knew no other artificial light but fires. It was thus the Greeks procured light in the heroic agesⁿ; by bringing, when it was night, a pan of burning coals into their apartments. When they wanted to light themselves from one place to another, they lighted long thin pieces of wood, and carried them in their hands^o. There are many nations at present in both continents in this state, who have no other method of showing light but by fires^p. Some traces of these primitive practices still remain in many civilized countries. The Chinese use the branches of the pine dried at the fire, as torches for travelling with at night^q.

^k Diod. l. 5. p. 389.

^l See part 2. b. 4. c. 2.

^m See Plin. l. 15. sect. 3. p. 734.

ⁿ See part 2. b. 2. sect. 2. c. 1. art. 3.

^o Ibid.

^p Ramusio, t. 1. fol. 105. C.; Hist. gen. des voyag. t. 3. p. 117.; Voyag. de Coreal, t. 1. p. 212. 213.; Mœurs des sauvages, t. 2. p. 158.

^q Mem. du P. le Comte, t. 1. p. 291.

In many places of Europe the country-people use pieces of wood dried in ovens for lamps and torches, as they did in the first ages.

Industrious and ingenious people must be soon sensible of the inconvenience of these practices. They sought therefore for more commodious methods of procuring light. By chance some person or other took notice, that some bodies, after they had been dipt in oil, gave a very lasting light, and consumed but slowly. This observation was enough to give a hint for the invention of lamps. This invention took place in the ages we are now upon, and is ascribed to the Egyptians^r. Lamps in fact must have been very well known in Egypt before Moses's time. The great use which this legislator has made of them, and the circumstantial descriptions he has given of their construction, leave us no room to doubt of this^r.

But there are other facts which prove, that the use of lamps was much more ancient. In Abraham's mysterious dream recorded in Genesis, it is said that he saw, among other things, a burning lamp pass before him^r. Job also speaks very often of lamps, and even makes frequent allusions to them^u. Doubtless these machines at first were very coarse and clumsy; by degrees they formed them with much more art and magnificence. Finally, lamps were the most perfect means the ancients were acquainted with for giving light. They had no idea of employing tallow or wax for that purpose.

ARTICLE V.

Of Gardening.

AMongst that immense number and variety of trees and plants which nature presents to our view, there are many which, without any care or cultivation, afford a very proper and even delicious nourishment to man; for that reason, those

^r Clem. Alex. Strom. l. 1. p. 361.

^r See Exod. c. 25. v. 31. &c.

^r Gen. c. 15. v. 17.

^u Job c. 12. v. 5. c. 21. v. 17.

kinds of trees and plants must have very early attracted his attention. The transplanting and inclosing these valuable kinds in one particular place for the more convenient cultivation of them, was a very natural and obvious thought. This was probably the origin of gardens, which are of the most remote antiquity. Ancient authors have left us no particular account of the state of gardening in these distant ages. We can only, therefore, propose a few conjectures on that subject.

We must place the fig-tree at the head of the first fruit-trees that were cultivated. This is the opinion of all ancient writers. They assure us, that figs were the first delicious fruit which mankind were acquainted with. They were even persuaded, that the discovery and use of this fruit had contributed very much to draw mankind out of their primitive barbarity*. We may say as much of the vine, whose fruit afforded both agreeable drink and food to men. The scriptures tell us that Noah cultivated the vine; and all profane historians agree in placing Bacchus in the first ages of the world†.

It appears also, that the almond-tree was cultivated in the most early times. When Jacob resolved to send Benjamin into Egypt, he commanded his sons to carry Joseph a present of almonds, amongst some other things‡. We must add to these likewise the pomegranate. We see, by the murmurings of the Israelites in the wilderness, that the fig-tree, the vine, and the pomegranate-tree, must have been known and cultivated in Egypt from time immemorial§.

The cultivation of the trees I have mentioned, is very easy. Nothing was necessary to procure abundance of their fruit but to lop, prune, and dung them. This was all the knowledge which mankind had for many ages of the cultivation of fruit-trees; and this knowledge, as all ancient traditions inform us, they owed to chance. They say a she-goat gave the first hint of lopping the vine. This animal having broused upon a vine, it was observed to bear more plentifully the following year than usual||. From this discovery they began to study the

* Athen. l. 3. p. 74.

† See *supra*, p. 106.

‡ Gen. c. 43. v. 11.

§ Num. c. 20. v. 5.

|| Hygin. fab. 274.; Pausan. l. 2. c. 38.

most advantageous ways of lopping their vines. Acofta, in his natural hiftory of the Indies, relates, that formerly the rose-bufhes in America grew fo rank in wood, that they bore no rofes. By accident one of them was fet on fire, and burnt all but a few flips, which the year after produced a great quantity of rofes. From thence the inhabitants learned to prune and cut off the fuperfluous branches from their rose-bufhes^c. It feems probable, that a like accident had taught the Greeks how to cultivate thefe fhrubs; for Theophrastus tells us, it was the custom in Greece to fet fire to their rose-bufhes, without which they would not produce flowers^d. We might quote a great number of fuch happy accidents.

But thefe operations of lopping, pruning, and dunging were not enough to make their trees bear fweet, wholefome, and pleafant fruit. This feeret depended upon a more abftrufe and more difficult operation. It is obvious I mean that of ingrafting. We may boldly reckon this amongst the number of thofe arts which have been brought to light by chance. But by what chance? We can only form conjectures about this, more or lefs probable. I am not fatisfied with what Pliny relates concerning the manner in which he pretends the art of ingrafting was difcovered. He fays, that a peafant defigning to inclofe his cottage with a fence of pales, funk fome branches of ivy in the ground, and fixed the ends of his pales in thefe, to make them laft the longer. It happened that the pales, being probably of green wood, took root, and put forth new fhoots; from whence the peafant concluded, that they received fap and nourifhment from thefe trunks of wood, the fame as if they had been planted in the earth. The reflections, fays he, which were made on this event occafioned the difcovery of the art of ingrafting^e. But I cannot perfuade myfelf, that this art owed its origin to fuch an event as this^f. Lucretius propofes a more probable conjecture concerning this difcovery^g; but I am notwithstanding inclined to afcribe it rather to fome other accident.

^c Fol. 178. *verfo*. ^d De cauf. plant. l. 3. c. 24. ^e Plin. l. 17. feft. 24.

^f See les mem. de l'Acad. des fciences, ann. 1744, M. p. 34. 35.

^g L. 5. v. 1360. &c.

As soon as men began to inclose several plants and trees in one spot of ground, they would perceive a great difference between those which were inclosed, and those of the same kinds which remained in the woods and open fields^h. I imagine, that the idea of ingrafting might be suggested afterwards, by their discovering two branches of different fruit-trees united and incorporated on the same stock, and by the reflections they would make on this discovery. It is not uncommon to see the branches, or even the trunks of certain trees when planted very near each other, unite and grow togetherⁱ. The wind, or some other accident might rub the branches of two neighbouring trees so strongly against one another as to wear away the bark, by which means the sap of each branch might insinuate itself into the other^k, and unite them together. This accident would occasion their bearing better and more beautiful fruit than they had been used to do^l. This improvement would be observed by their eating this fruit, and the cause of it would be inquired into. They would examine the condition of the trees which had produced this excellent fruit, and would observe that they were united to the neighbouring trees by some branches. To this union consequently they would ascribe the excellence in their fruit. It is very probable that men would endeavour to imitate this operation of nature, and follow the path which she had pointed out. By long reflection, and repeated trials, they would hit upon the various ways of ingrafting, which we know were in use among the ancients. But we cannot place the discovery of these arts in the ages now under our consideration.

It is in effect impossible to fix the precise epocha of the invention of ingrafting. All our doubts however would presently be dispelled if we could depend upon the authority of

^h Acad. des scienc. ann. 1728, H. p. 49. ann. 1744, M. p. 2.

ⁱ See Acad. des scienc. ann. 1738, M. p. 265. 266. ann. 1710, H. p. 79. ann. 1722, M. p. 127.

^k See *ibid.* ann. 1722, H. p. 61. ann. 1738, M. p. 265. 266.

^l M. Duhamel assures us, that the branch of a wild tree ingrafted upon its own root gains something. A kind of gland formed at the place of insertion, somewhat refines the juices. Acad. des sciences, ann. 1728, H. p. 47.

Macrobius.

Macrobius. That author asserts, that Saturn taught the people of Latium the art of ingrafting trees ^m. But this assertion seems to me improbable, and the more so, as, in the age of Homer and Hesiod ⁿ, the Greeks do not appear to have had any knowledge of ingrafting, or the operations relating to it. It appears to me demonstrated, that not only in the ages we are now treating of, but a long time after, mankind were as ignorant in the cultivation of trees as a great many nations in Asia and America are at this day. In the Greater India and in Persia there are a great many fruit-trees, but almost all wild. Ingrafting is there unknown ^o. It is the same in South America. All the fruit-trees we meet with in these immense regions, remain as nature produced them without being ingrafted ^p. I am the more inclined to think that this art was unknown in the first ages, as we do not find that fruits make any part of the repasts described by Homer, and other writers of antiquity.

As to the various kinds of legumes, it appears that they were known and cultivated very early. The Egyptians made great use of these in the remotest ages. We may judge of this by the murmurs of the Israelites in the wilderness, who regretted the cucumbers, melons, leeks, onions, and garlic which they had eaten plentifully in Egypt ^q.

ARTICLE VI.

Of some inventions relative to subsistence.

ONE of the salutary effects of government and civilized society is, that, in these societies, men take care to lay up provisions in a time of plenty against a time of scarcity.

^m Saturnal. l. 2. c. 7. p. 217.

^p We shall discuss this fact in the second part of this work.

^q Observat. astron. du P. Souciet, t. 1. p. 18. ; Chardin, t. 4. p. 55.

^r Hist. des Incas, t. 2. p. 334. ; Voyag. au Pérou par M. Bouguer, p. 63. ; Voyag. de Frezier, p. 70. & 105.

^s Num. c. 11. v. 5.

The

The savages know nothing of such precautions; they take no measures to provide against future wants. They eat as fast as they gather. They have no granaries nor magazines to preserve the fruits of the earth^r; accordingly they are often reduced to great misery, and sometimes die of hunger, which is the reason these nations are so little populous. There are some regions in America which do not contain, perhaps, above ten thousand souls, in a space of more than eighteen hundred miles. Civilized nations foresee and provide against these calamities, by laying up the fruits of the earth in places proper for their preservation. This piece of sound policy was established in Egypt in the remotest ages. We see, that, in the time of Joseph, that people were used to lay up their corn in public granaries^r. To the same provident spirit we may ascribe those ancient laws, so severe against killing any animals used in husbandry^r. I have shewn sufficiently, in the article of laws and government, that the encouragement of agriculture has always been one of the principal objects legislators had in view^r.

I ascribe to the same principle, the origin of the art of preserving meat by the use of salt; an art so simple, and at the same time so useful. It will never be forgot, that a great prince, Charles V. erected a statue in honour of G. Bukel, who found out the secret of salting and barrelling herrings. The Egyptians seem to have known, in the most distant times, this property of salt, of preserving bodies seasoned with it, or laid in it, from corruption, and how to make the best use of this discovery. The art of salting flesh and fish, was very early practised by that people^r. In the time of Mœris, one of the ancient sovereigns of Egypt, there was a great number of workmen, whose only business was to salt the fish taken in the canal made at the command of that prince^r. It was no doubt from the Egyptians, that the Israelites had learned the art of preserving meat by salt, an art which we see they practised in the wilderness^r.

^r Lescarbot, *histoire de la Nouv. Franc.* p. 666. & 669.

^r Gen. c. 41. v. 35. &c.

^r See *supra*, b. 1. p. 35.

^r Ibid. *loco cit.*

^r Herod. l. 2. n. 77.

^r Diod. l. 1. p. 62.

^r See le P. Calmet in Num. c. 11. v. 32.

Other arts kept pace with agriculture in its improvements. There is such an intimate connection between this and other arts, that they cannot be separated. As agriculture advanced towards perfection, new arts were invented, and the old improved. The most necessary arts were first cultivated, those which administer to luxury succeeded. I shall follow this order in my future observations on these subjects.

C H A P. II.

Of Cloathing.

NEXT to agriculture, the arts of making cloathing are without dispute the most necessary and useful. There are few inventions which have displayed so much sagacity, and done so much honour to the human understanding. The use of cloathing is owing to some other cause than the mere necessity of securing the body against the injuries of the air. There are, in fact, many climates where this precaution would be almost quite unnecessary; yet excepting a few of the most barbarous savages, all mankind have been, and still are accustomed to cover their bodies with garments, more or less elegant, according to their skill and industry. Nay more, we see that the arts of making garments were invented in the mildest climates, where there was the least need for any covering to the body. Necessity alone then could not be the cause of mens cloathing themselves; some other reason must also have determined them to it. But whatever might be the motive of this custom, so ancient and universal, it is very certain, that men in all ages have busied themselves, in searching for proper materials for covering their bodies, without restraining the activity of their motions. The working up of these materials has been the object of infinite, incessant study and reflection. To these earnest inquiries and reiterated experiments, we are indebted for that prodigious number of different kinds of stuffs, which are in use amongst civilized nations.

The manner in which the first men were clothed, is another incontestable proof of that state of ignorance and barbari-

ty, which, as I have often observed, succeeded the confusion of tongues, and dispersion of families. Their vestments discovered neither art nor industry. They made use of such as nature presented, and needed the least preparation. Some nations covered themselves with the bark of trees, others with leaves, herbs, or bulrushes rudely interwoven^a. The present ignorance of savage nations presents us with a model of these ancient usages^b. The skins of animals, however, seem to have been the most universally used as garments, in these first ages. But they knew not then the art of softening these skins, or making them flexible by certain operations. They wore them in the same state they came from the bodies of the animals^c. Mankind in general were then in that state of ignorance the savages are at present, who know neither how to tan nor curry the skins they use for cloathing^d.

These skins however hardening and contracting for want of dressing, the use of them must have been extremely incommodious and disagreeable. It is very probable then, that men would soon apply themselves to find out methods of making them more soft and flexible. We can only form conjectures about the first means they used for this purpose. Their first operations would be very simple. The ancient annals of China tell us, that it was Tchin-fang, one of their first kings, who taught men to prepare the skins of animals, by taking off their hair, with a kind of rollers of wood^e. There was probably but little art in these ancient practices. They were perhaps like those which we know are used by several modern nations,

^a Strabo, l. 11. p. 781.; Senec. ep. 95. p. 406.; Hist. des Incas, t. 1. p. 17.; Lettr. édif. t. 2. p. 139.; Extr. des hist. Chinois, p. 3.

^b Voyag. de Dampier, t. 2. p. 141.; Voyag. des Holland. t. 4. p. 306. & 321. t. 5. p. 36.; Mem. de Trev. Mai 1717, p. 712. 713.

^c Sanchon. apud Euseb. p. 35. A.; Lucret. l. 6. v. 1011.; Diod. l. 1. p. 12. & 28. l. 2. p. 151. l. 3. p. 217.; Paus. l. 10. c. 38.; Plut. t. 2. p. 646. E.; P. Festus voce in Pelle Lanata, &c. p. 194. & voce Pellem habere Hercules, &c. p. 340.; Hist. des Incas, t. 1. p. 17.; Martini, hist. de la Chine, t. 1. p. 20.; Virgil. georg. l. 3. v. 383.; Bib. ancien. & mod. t. 22. p. 23.

^d Hist. nat. de l'Islande, t. 1. p. 264.; Voyag. de Frezier, p. 77.; Bibl. ancien. & mod. t. 22. p. 23.; Voyag. à la baye d'Hudson, t. 2. p. 24.

^e Extrait des hist. Chin.

who,

who, being still strangers to the arts, set before us an image of these primitive times.

The savages of North America prepare the skins they use for cloathing, by first steeping them a considerable time in water, afterwards scraping them, then rubbing and dressing them by main strength. To soften them still further, they besmear them with the fat of some animal, which renders them very soft and flexible^f. They have the art also of rendering these skins water-proof, by hanging them in the smoke^g. The inhabitants of Iceland make use even of less art. They take the skin while it is still warm, and by pulling it backwards and forwards against their knees, they strip off the wool or hair. This is indeed a very fatiguing method, but they know no better. After having moistened it with water, they stretch it as much as possible, nail it against a wall, and leave it to dry in the open air. When it is well dried, they take it from the wall, and use it directly for all kinds of purposes. Their only further care is to rub these skins every four or five days with the livers of very oily fish, which keeps them soft and pliant^h. The inhabitants of Greenland, a very rude and savage people, are somewhat more artificial in their manner of dressing the skins of deer and sea-dogs, with which they clothe themselves. They prepare them first with urine, fat, &c. then beat them very much with stones, to soften and render them fit for the various purposes for which they design themⁱ.

The skins of animals are not naturally adapted to form an exact and commodious covering to the human body. It was necessary therefore to find the art of adjusting them to its shape, and uniting several of them together. The greatest part of mankind were a long time without the use of thread. They were obliged to supply the want of it by some other expedients. We may judge of these original contrivances, by those of several modern nations. The garments of the people of Greenland are sewed with the guts of sea-dogs and other fish, dried in the air, and cut into very slender thongs^k. The Eskimaux,

^f Moeurs des sauvages, t. 2. p. 32.

^g Id. Ibid.

^h Hist. nat. de l'Islande, t. 1. p. 264.

ⁱ Ibid, t. 2. p. 18.

^k Hist. nat. de l'Islande, t. 2. p. 181.

the Samoides, the savages of Africa and America, use the sinews of animals for the same purpose¹. They must have used them also in the first ages. Hesiod mentions these ancient practices^m. Thorns, sharp bones, and the like, supplied the place of awls, needles, and pins, in sewing their garments. The ancient inhabitants of Peru, who in many respects were a sagacious civilized people, knew nothing of needles or pins. They made use of long thorns for sewing and fastening their vestmentsⁿ. We might mention several nations who at this day are reduced to the same expedients^o.

As mankind became more civilized, they improved upon these primitive practices. They endeavoured to find garments more agreeable and commodious than the bark of trees, leaves, skins, &c. It was soon perceived, that a better use might be made of the spoils of animals. They endeavoured to find out methods for taking off the hair or wool, and forming these into a covering as substantial and warm, but more pliable than their skins or furs. This art is very ancient. In the patriarchal ages, we see the people of Mesopotamia^p and Palestine^q took great care of shearing their sheep. The first stuffs were probably a kind of felt. Men would begin with uniting the different parts of the wool or hair with some glutinous matter; by this means they might make a stuff, tolerably soft, and nearly of an equal thickness. The ancients made very much use of felt^r.

One discovery leads to another. The thought of separating the hair or wool from the skin, was one good step; but great advantage could not have been made of this, without the further discovery of the art of uniting the separate parts into one continued thread, by means of the spindle. This invention is of very great antiquity. The Egyptians say, it was Isis who

¹ Voyage à la baye d'Hudf. t. 2. p. 26.; Hist. gen. des voyag. t. 5. p. 171.; Rec. des voyag. de la comp. des Indes Holland. t. 1. p. 159.; Moeurs des sauvages, t. 2. p. 160.

^m See op. v. 544.

ⁿ Hist. des Incas, t. 2. p. 63. & 77.

^o See Lettr. édif. t. 11. p. 421.; Voyag. de Frezier, p. 109. & 214.; Voyag. des Holland. t. 1. p. 159.; Hist. des Incas, t. 1. p. 107.; Hist. gen. des voyag. t. 9. p. 308. t. 5. p. 171.; Voyag. à la baye d'Hudson, t. 2. p. 168.

^p Gen. c. 31. v. 19. ^q Ibid. c. 38. v. 12. 13. ^r Plin. l. 8. sect. 73. p. 475.

taught them the art of spinning^c. The Chinese give the honour of this invention to the consort of their emperor Yao^c. We may observe on this subject, that the traditions of almost all nations ascribe the honour of inventing the arts of spinning, weaving, and sewing, to women. The Lydians ascribed this discovery to Arachne^u, the Greeks to Minerva^x, the Peruvians to Mama-oella^y, wife to Manco-capac their first sovereign. It was also to women, that the Greek and Roman antiquities attributed the invention of the needle^z, and the art of spinning the silk of certain worms, and weaving it into stuffs^a. I cannot determine whether these traditions be founded on real history, or have only arisen from these particular occupations having in all ages and countries been allotted to the fair sex.

We can say nothing certain concerning the manner in which men first made use of yarn. It is probable they would make many essays, and compose a variety of works^b, as tresses, net-work, &c. till by degrees they found out the web by warp and woof; the most useful invention, perhaps, which mankind are in possession of. For, in fact, it is by means of this art that we can work up an infinite variety of materials into warm, commodious, and beautiful garments.

We might form a great many conjectures about the origin of weaving^{*}. We might say with an ancient author, that men owe the discovery of this art to the spider^c. They took notice of the manner in which this insect warped its web; they observed how she guided and managed the threads, by the weight of her own body, &c. But without mentioning the various hypotheses which might be formed on this subject, I

^c Mart. Capella, l. 2. p. 39.

^c Martini, hist. de la Chine, t. 1. p. 61.

^u Ovid. metam. l. 6. init.; Plin. l. 7. sect. 57. p. 414.

^x See part 2. b. 2. sect. 2. c. 2. ^y Hist des Incas, t. 1. p. 22. & 31.

^z Hygin. fab. 274.

^a Arist. hist. anim. l. 5. c. 19. p. 849.; Plin. l. 11. sect. 26. p. 604.; Isidor. orig. l. 14. c. 6.

^b See Lucret. l. 6. v. 1349. &c.; Braun. de vestitu sacerdot. Hebr. n. 233. p. 250. &c.

^{*} By weaving I mean all sorts of works that are made in the loom.

^c Democritus apud Plut. t. 2. p. 974. A.

imagine,

imagine, that the idea of the web of warp and woof might strike men first, from the inspection of the inner barks of certain trees. Some of these, if we except their coarseness and stiffness, bear a very great resemblance to a web; the fibres are interwoven and cross each other almost at right angles*. The manner therefore in which the filaments of these barks are disposed, might very possibly give the first hint of the web of warp and woof.

When we reflect on the prodigious number and great variety of machines which are at present employed in the fabrication of our stuffs, we can hardly allow ourselves to believe, that men in these first ages could form any thing like them. Yet it is easy to conceive they might, if instead of viewing our own complicated methods, we observe the simple ones of several modern nations.

The inhabitants of the Greater India, Africa, and America, at present weave stuffs, with a few very simple instruments. The people of these remote ages might do the same. Though the workmen of these countries are strangers to many branches of knowledge which we possess, yet we can never sufficiently admire the beauty and fineness of their stuffs. They use no other instruments but a shuttle and a few small pieces of wood^a. By the help, therefore, of such simple tools, men in these early times might accomplish the task of weaving cloths of warp and woof.

However this may be, the invention of weaving is extremely ancient. Abraham in refusing the booty offered him by the King of Sodom, says, "I will not take from a thread of the woof, even to a shoe-latchet*." Moses says that Abimelech made a present of a vail to Sarah^f. He observes also, that Rebecca covered herself with a vail, when she perceived Isaac^g. Jacob gave his son Joseph a coat of divers colours^h. Moses tells us further, that Pharaoh arrayed this patriarch in

* I have a piece of this kind brought from the Indies.

^a Lettr. édif. t. 9. p. 420.; Hist. gen. des voyag. t. 3. p. 184.; Voyag. de Damp. t. 4. p. 232. 233.; Hist. des Incas, t. 2. p. 77.; Voyag. de J. de Lery, p. 275.; Nouv. relat. de la France equinox, p. 135.

^e Gen. c. 14. v. 23.

^f Ibid. c. 20. v. 16.

^g Ibid. c. 24. v. 65.

^h Ibid. c. 37. v. 3.

vestures of fine cotton ¹. A weaver's shuttle is mentioned in the book of Job ². These facts sufficiently prove the great antiquity of the art of weaving with warp and woof ³.

It may not perhaps be improper to remark further, that in these very ancient times this work was performed in a standing posture ⁴. Both Homer ⁵ and Virgil ⁶ attest this. This was owing to the different construction of their looms from what ours are at present. The warp was extended perpendicularly from top to bottom, as it is at present in our tapestry looms, with this difference, that it was not made fast at bottom upon a cylinder, as in our manufactories of tapestry. They kept it firm by means of a piece of wood to which they hung very heavy weights ⁷. The Egyptians, it is said, were the first who changed this incommodious and fatiguing posture, into that of sitting at this work, as our weavers of tapestry, linen, and woollen cloth, do at present ⁸. It is well known that it was women who originally spun, wove, and even dyed wool and cloth ⁹.

The wool and hair of animals, no doubt, were the first materials most generally used for making garments. There are however several plants, such as cotton, flax, hemp, &c. which are also very proper for this purpose. It would not probably be long before they began to work cotton. The seeds of this shrub are lodged in a kind of down, exceeding fine and soft. This down has a great resemblance to fine wool, and requires but little preparation ¹⁰; they must have begun, therefore, sometimes to make it into cloth. What I now advance is not a mere conjecture. The robe in which Pharaoh arrayed Joseph was of cotton ¹¹. A few reflections will be sufficient to convince us of this.

¹ Gen. c. 41. v. 42.

² C. 7. v. 6.

³ Plato reckons weaving amongst the first invented arts. De leg. l. 3. p. 805.

⁴ See Junius de pictura veter. l. 1. c. 4. p. 26.

⁵ L. 1. v. 32.

⁶ Georg. l. 1. v. 294.

⁷ Seneca, ep. 90. p. 408. See Braunius de vestitu sacerdot. Hebr. c. 16. p. 269.

⁸ Junius de pictura veter. l. 1. c. 4. p. 26.; Braunius, p. 254. 267. & 329.

⁹ See Exod. c. 35. v. 25.

¹⁰ See J. de Lery, voyag. d'Ameriq. p. 274.

¹¹ See le P. Calmet, Gen. c. 41. v. 42.

Almost all commentators on the scriptures translate the Hebrew word * used by Moses to describe the nature of the stuff given to Joseph, by the word *Byffus*. But the dispute is at present, what kind of matter that was which was anciently thus named. Some think it meant a kind of silk of a bright yellow, which we see sometimes adhering like a tuft to a very large kind of shell-fish called *pinnae marinae* ^a. We know that the ancients knew and used this as a material for making cloth ^x. Others think that the *Byffus* signifies a kind of very fine flax, which grew in Egypt, or Judea ^y. Others again are of opinion that it is cotton. This opinion seems to me the more probable, as we cannot apply the description given of the *Byffus* by Pollux to any thing but cotton. This writer says, that this material came from a kind of nut which grew in Egypt; that they opened the nut, extracted this substance, spun it, and wove it for garments ^z. Philostrates describes it much in the same manner ^a. These characteristics agree very well with cotton. It is found in a kind of brown nut, which grows on a small shrub. But not to enter any further into this disquisition, it seems evident from the analogy of languages, that the word used by Moses to describe Joseph's garment, must mean cotton ^{*}. We learn further from profane authors, that robes of cotton were very ancient in Egypt, and that they were worn only by persons of the greatest distinction ^b.

The use of flax, hemp, and other filamentous plants, was not so obvious as that of cotton. Their fibrous parts must first be disengaged from the bark and wood, before they can be spun or wove. In order to this, it is necessary to water, break, switch, and heckle them. Yet it cannot be doubted that robes

*  Schefch.

^a Geiner, hist. animal. l. 4. c. 6. ; Acad. des scienc. ann. 1712, M. p. 204.

^x Basil. in hexam. orat. p. 7. ; Procop. de Justiniani fabriciis, l. 3. p. 30. ; Calmet, t. 7. p. 145.

^y Bochart, Phaleg. l. 3. c. 4. p. 177. 178. ^z L. 7. c. 17. p. 741.

^a De vita Apollon. l. 2. c. 20. p. 71. See also Strabo, l. 15. p. 1016. ; Philo de vita Mosis, p. 667. C.

* This is the opinion of some of the most celebrated interpreters and commentators. See le P. Calmet, t. 2. p. 351. 353. t. 7. p. 144.

^b Plin. l. 19. sect. 2. p. 156.

of linen were used in very ancient times. Isis is said to have made the first discovery of this kind of garment ^c. It is certain from the testimony of Moses, that flax was cultivated in Egypt from time immemorial. He takes notice, that the flax was destroyed by that dreadful hail, which was one of the plagues the Lord sent down upon Egypt ^d. We see also that this legislator forbids the Israelites to wear a garment made of linen and woollen together ^e.

The goodness of cloths depends, in part, on the operation of fulling. It is this which gives them their consistence and solidity. This operation is performed by the playing of two large wooden mallets, by means of a wheel, upon the cloth inclosed in troughs. The redoubled blows which it receives, render it more even and substantial. The art of fulling was not known in Europe till after the Trojan war ^f; but it is highly probable, this secret was discovered long before in Asia and Egypt. Their first essays, no doubt, were very imperfect; probably not unlike the methods used by several ignorant and barbarous nations in the present times. The inhabitants of Iceland full their cloths by pouring hot urine upon them, rolling and dashing them against the ground, and treading them with their feet for a whole day. They full their gloves and bonnets in the same manner, only it is with their hands. A man must be both strong and dexterous, to full a single waistcoat or three pair of stockings in a day ^g. Such probably was the state of the fulling-art at its beginning. Besides, in whatever way they performed this operation in these early times, it must have been very tedious and fatiguing, since they had no knowledge of the fulling-mill.

^c Mart. Capella, l. 2. p. 39.; Jul. Firmicus, l. de profess. relig. p. 49.

^d Exod. c. 9. v. 31.

^e Deut. c. 22. v. 11.

^f See part 2. book 2. sect. 2. c. 2.

^g Hist. nat. de l'Islande, t. I. p. 266.

ARTICLE I.

Of the art of Dying.

THE materials of which cloths are made, for the most part, are naturally of dull and gloomy colours. Garments would consequently have had a disagreeable uniformity, if we had not found the art to remedy this, and vary their shades. The accidental bruising of fruits or herbs, the effect of rain upon certain earths and minerals, might suggest the first hint of the art of dying, and of the materials proper for it. Every climate furnishes man with ferruginous earths, with boles of all colours, with saline and vegetable materials for this art. The difficulty must have been to find the art of applying them. But how many essays and trials must have been made, before they found out the most proper methods of applying them to stuffs, so as to stain them with beautiful and lasting colours? In this consists the principal excellence of the dyer's art, one of the most ingenious and difficult which we know.

Dying is performed by means of limes, salts, waters, lyes, fermentations, macerations, &c. Dying is distinguished into two kinds, the hot, and the cold. Hot dying is when the colouring materials are boiled, either with the stuffs, or before the stuffs are put into them. Cold dying is when the colours are dissolved in something cold, or at least when they cool the liquor before they put in the stuffs. We cannot discover which of these was first used, and still less in what manner they were performed. We must be content with knowing that the art of dying is very ancient. It was practised in the ages which are the subject of this first part of our work. The Chinese pretend that they owe this discovery to Hoang-ti, one of their first sovereigns^a. It is said in Genesis, that they bound a scarlet thread upon the arm of one of Tamar's childrenⁱ.

^a Martini. hist. de la Chine, l. 1. p. 42.

ⁱ Gen, c, 38, v, 27. See Calmet, t. 2, p. 350.

Job, who I think lived in the same age^k, speaks of the lustre of the colours of the stuffs which were brought from India^l. We cannot however give a circumstantial account of the particulars of their knowledge in this art of dying, nor to what degree of perfection they had brought it. I shall have occasion to speak more at large, on this subject, in the second part.

One of the most agreeable effects of the art of dying, is the diversifying the colours of stuffs. There are two ways by which this agreeable variety is produced, either by needle-work with threads of different colours, on an uniform ground; or by making use of yarn of different colours in the weaving. The first of these inventions is attributed to the Phrygians^m, a very ancient nationⁿ; the last to the Babylonians^o. Many things incline us to think that these arts were known even in the times of which we are now treating. The great progress these arts had made in the days of Moses^p, supposes that they had been discovered long before. It appears to me certain, then, that the arts of embroidery and weaving stuffs of various colours, were invented in the ages we are now upon. But I shall not insist on the manner in which they were then practised, as I can say nothing satisfactory upon that subject.

Another art nearly related to that which we have been speaking of, is that of cleaning and whitening garments when they have been stained and sullied. Water by itself is not sufficient for this. We must communicate to it by means of powders, ashes, &c. that deterfive quality which is necessary to extract the stains which they have contracted. The ancients knew nothing of soap, but supplied the want of it by various means. Job speaks of washing his garments in a pit with the herb *Borith*^q. This passage shews that the method of cleaning garments in these ages, was, by throwing them into a pit full of water, impregnated with some kind of ashes; a method which seems to have been very universal in these first times.

^k See our dissertation.

^l Gen. c. 28. v. 16.

^m Plin. l. 8. sect. 74. p. 476.

ⁿ See Herod. l. 2. n. 2.

^o Plin. *loco supra cit.*

^p See part 2. b. 2. c. 2.

^q C. 9. v. 30.

The Hebrew text has *Bor*; but the best interpreters think it is the same with the *Borith* of Jeremiah, c. 2. v. 22. & of Malach. c. 3. v. 2.

Homer describes Nauficæa and her companions washing their garments, by treading them with their feet in a pit^r.

With respect to the herb which Job names *Borith*, I imagine it is sal-worth. This plant is very common in Syria, Judea, Egypt, and Arabia. They burn it, and pour water upon the ashes. This water becomes impregnated with a very strong lixivial salt, proper for taking stains or impurities out of wool or cloth.

The Greeks and Romans used several kinds of earths^r, and plants^r, instead of soap. The savages of America^u make a kind of soap-water, of certain fruits, with which they wash their cotton beds and other stuffs. In Iceland the women make a lye of ashes and urine^x. The Persians employ boles and marls^r. In many countries they find earths, which, dissolved in water, have the property of cleaning and whitening cloth and linen^z. All these methods might perhaps be practised in the primitive ages*. The necessities of all mankind are much the same, and all climates present them nearly with the same resources. It is the art of applying these which distinguishes polite and civilized nations from savages and barbarians.

C H A P. III.

Of Architecture.

IN all ages, mankind have been obliged to seek for some shelter against the injuries of the air, and the assaults of wild beasts. Thus the art of building was one of the first

^r Odyss. l. 6. v. 92.

^r Plin. l. 35. sect. 57.

^u Idem, l. 27. sect. 88.

^u Voyag. de J. de Lery, p. 276.

^x Hist. de l'Islande, t. 1. p. 266.

^x Chardin, t. 4. p. 66. 67.

^z Journ. des scav. ann. 1752, Juil. p. 418.; Hist. gen. des Antilles, par le P. du Tertre, t. 2. p. 76. in 4°. Paris, 1667.; Hist. nat. de Colonne, t. 2. p. 113. 114.; Piganiol. descript. de France, t. 5. p. 72. edit. in 12°. of 1722.

* I have read somewhere of certain savages, who laid their cloths for a considerable time amongst the dung, and afterwards washed them in clear water, by which they succeeded in taking out the stains, the salts in the dung acting as a soap.

that

that was practised, both before and after the flood*. Architecture, therefore, owed its birth to necessity, and its embellishments to luxury. Men by reflecting upon their works, and comparing them with each other, improved their taste and skill. They first discovered the rules of proportion. They afterwards added such ornaments as were suggested by knowledge, or by fancy, in different ages and countries. So that architecture has been always changing, been embellished, corrupted, and restored, according to the good or ill taste of different ages and nations.

As long as the posterity of Noah remained united, they were capable of cultivating the antediluvian discoveries which had been preserved. The design which they formed, and in part executed, of building a city in the plains of Shinar^b, and erecting a tower in it, of a prodigious height^c, is a demonstration, that the new inhabitants of the earth were not quite ignorant of architecture. But the confusion of their tongues obliging them to disperse, they lost for the most part both the theory and practice, even of the most necessary arts.

The wandering life which almost all the families of the world led, in the first ages, after the confusion of tongues, gave them no opportunity of cultivating arts, partly through want of skill, and partly through want of necessary tools. These first colonies had for some time no other habitations but dens and caverns^d. Several nations, at present, present us with an image of those wretched ages*.

As soon as mankind had provided for the supply of their most pressing wants, they would desire to quit those dreary and unwholesome dwellings, and seek for more convenient and agreeable habitations. These first huts would be of different materials, as the climates afforded, and of different

* Gen. c. 4. v. 17.

^b Ibid. c. 11. v. 4.

* Ibid. See what I have said on that subject in the introduction, p. 2.

^d Diod. l. 1. p. 12.; Æschyl. in Prometh. vincito, v. 449. &c.; Vitruv. l. 2. c. 1.; Plin. l. 7. sect. 57. p. 413.; Pausan. l. 10. c. 17. p. 836.; Suid. voce *Ανδραζευ*, t. 1. p. 522.; Martini, hist. de la Chine, t. 1. p. 19. 20.; Bibl. univ. t. 2. p. 412.

* Rec. des voyag. au Nord, t. 8. p. 207.; Voyag. de Coreal, t. 1. p. 232. 238.; Hist. gen. des voyag. t. 1. p. 96. t. 8. p. 6.; Belon, observat. l. 2. c. 61.; Lettr. édif. t. 5. p. 273.

forms, according to the stupidity or ingenuity of the people. Reeds, canes, the branches, leaves, and bark of trees, together with clay, were the first materials employed in building. The first houses in Egypt and Palestine ^r were of reeds and canes interwoven. There are still some of this kind to be found in Peru ^s. The first houses of the Greeks were only of clay. This people were for some time ignorant of the art of hardening it to make bricks ⁿ. The houses in Iceland are built of rough stones, with no other cement than clay and moss. They are covered with turf ^t. The Abyssinians dwell in cabins built of clay and straw ^u. The houses in Monomotapa are only of wood ^v. There have even been formerly ^w, and are at present ^x, some nations who for want of materials, but chiefly for want of knowledge, built their huts of the bones and skins of sea-dogs, and other large fishes.

Wood is a material so proper for building, that men, no doubt, employed it for this purpose, in places where it could be easily procured. They began with interweaving the branches of trees in a rude manner ^y, upon stakes fixed in the ground, and afterwards daubing them with clay, and covering them with leaves or turf ^p. The form of these first cabins was round like our glass-houses. The hearth was in the middle of the floor, and a small hole at the top gave vent to the smoke. They admitted light only by the door. Such was probably the manner of building in the first ages, which has been continued by some nations both ancient ^q and modern ^r. Some of the first houses, too, might be built of the trunks of trees, piled

^r Diod. l. 1. p. 52.; Sanchon. apud Euseb. p. 35. A.

^s Voyag. au Perou, par M. Bouguer, p. 8. & 10.

ⁿ Plin. l. 7. sect. 57. p. 413.

^t Hist. nat. de l'Islande, t. 1. p. 254. & 277. t. 2. p. 186. 187.

^u Bibl. rais. t. 1. p. 57.; Hist. gen. des voyag. t. 1. p. 221.

^v Hist. gen. des voyag. t. 1. p. 91. ^w Strabo, l. 15. p. 1050. & 1056.

^x Journ. du P. Feuillée, t. 2. p. 587.; Voyag. de Frezier, p. 130.

^q Martini hist. de la Chine, p. 19. 20. ^r Vitruv. l. 2. c. 1.

^y Vitruv. l. 2. c. 1.; Diod. l. 5. p. 346.; Strabo, l. 4. p. 301.; Tacit. de mor. Germ. n. 16.; Hist. de Languedoc, t. 1. p. 44. n. 9.

^p Rec. des voyag. qui ont servi à l'établissement de la campagn. des Ind. Holland. t. 5. p. 36.; Mem. de Trev. Mai 1717, p. 713. 714.; Hist. gen. des voyag. t. 11. p. 25.

upon each other, and forming a square^r. We see still the traces of these ancient practices in several villages of Germany, Poland, and Russia. Such also are the habitations of the people of Florida and Louisiana^t, of the Eskimaux^u, and of several other nations^x.

The construction of these first houses required neither much preparation, nor much knowledge. They needed neither many machines, nor many tools. They felled their trees originally, as the savages do at present, by the help of fire. They undermined them by little and little with torches or fire-brands, which they took care to keep close to the tree, and always burning. By the same means, too, they cut them into lengths, by placing fire-brands under them at proper distances^r. These, it is highly probable, were the methods used in the primitive times.

By degrees, tools for cutting and planing wood, would be invented. The first tools were made of certain stones which were hard, and not brittle. Some of these ancient tools are still to be seen in the cabinets of the curious^x. The greatest part of the American nations have no other tools for cutting and hewing wood^s. Afterwards tools made of metal were invented; but the number of them was very inconsiderable at first. We may judge of the knowledge of the most ancient nations, by that of the Peruvians before the arrival of the Spaniards in their country. They had no other instruments for working wood, but the axe and plane. Nails, saws, hammers, and other carpenters tools, were quite unknown to them^b. By degrees mankind improved in skill and industry; they substituted bricks, stones, and marble, in the place of wood, and raised edifices equally solid and magnificent.

^r See Vitruv. l. 2. c. 1.

They build houses in this manner at present in the Palatinate of Russia.

^t Moeurs des sauvag. t. 2. p. 7. 8. 11.

^u Voyage de la baye d'Hudson, t. 2. p. 43.

^x Voyag. de Frezier, p. 65. 66.; Chardin, t. 1. p. 134.; Nouvelle rat. de la France equinox, p. 141. 146.; Hist. gen. des voyag. t. 3. p. 185.

^y Moeurs des sauvag. t. 2. p. 110.; Lescarbot, hist. de la N. Franc. p. 776.; N. relat. de la France equinox, p. 152.; Hist. de la Virginie, p. 314.

^z See *infra*, c. 4.

^a Ibid.; Relat. de la riviere des Amazones, par le P. d'Acugna, t. 2. p. 213.

^b Hist. des Incas, t. 2. p. 61. 62.

The art of employing the materials which are most proper for masonry, must have cost the first architects a great deal of thought and study. It is probable, that stone was not the first kind of materials they made use of in building the houses which succeeded their huts and cabins. The cutting and hewing of stone requires the knowledge of more arts than men were acquainted with in those first ages. They began with using bricks^c; that is, clay formed in square moulds, dried in the sun, or baked in stoves, to give them hardness and solidity. The tower of Babel was built of such materials^d. The Egyptians also in all ages made great use of bricks^e. Tiles, which are so commodious a cover for houses, were invented in very ancient times^f.

We are absolutely ignorant of the precise time when men began to build houses of hewn stone. We may say the same of the invention of mortar, lime, and plaister, &c. These inventions were introduced insensibly, and by little and little. Several motives might make men apply their thoughts very early to find out the means of building solid and durable habitations. But it was properly agriculture that gave birth to architecture. The assiduous care and attendance which this way of life requires, obliged those who followed it to settle in one place, to contrive houses lasting and commodious^g. Accordingly it was in Chaldea, China, Egypt, and Phœnicia, that any thing deserving the name of architecture was first seen. Moses has preserved the names of three cities which Nimrod built in Chaldea^h. Assur, a short time after, and not far from the same place, founded Nineveh and two other citiesⁱ. The Chinese say, that Fo-hi inclosed cities and towns with walls^k. Lastly, we see, that, in the ages of Abraham and Jacob, there were several cities in Palestine and the adjacent provinces^l. As to Egypt, the prodigious antiquity

^c Sanchoniat. apud Euseb. p. 35. D.

^d Gen. c. II. v. 3.

^e See Exod. c. I. v. 14. c. 5. v. 7.

^f Plin. l. 7. p. 413.

^g See *supra*, book I. art. 2. p. 36.

^h Gen. c. 10. v. 10.

ⁱ Ibid. v. 11. & 12.

^k Martini, hist. de la Chine, l. I. p. 28.; Extrait des hist. Chin.

^l Gen. c. 19. v. 1. & 20. c. 28. v. 19.

of her cities is universally acknowledged ^m. There were some also very early built in Greece ⁿ.

Architecture, however, could make no great progress till mankind had discovered certain arts, which are absolutely necessary to its perfection; such as making of machines for raising and transporting weighty bodies, the art of taming animals, and training them to carry materials; last of all, the art of working metals, particularly iron. Not that it is absolutely impossible to build houses of stone, without the knowledge of these arts. The example of the people of Peru and Mexico proves the contrary. They had neither carts, sledges, nor beasts of burden ^o. They transported their materials by mere strength of arm ^p. They knew nothing of scaffolds, cranes, or other machines proper for the construction of buildings ^q. They were even ignorant of the use of iron ^r. Notwithstanding all this, they had the address to raise buildings of stone, which are beheld with admiration even at this day ^s. Their way of dressing stones was, to break them with certain flints very hard and black ^t, then polish them by rubbing one against another ^u. They might perhaps use the same methods in these primitive ages. There are still nations who know no better ways of cutting stones ^x, and yet build very grand edifices with few tools and machines ^y.

But these practices are so tedious and fatiguing, that as long as mankind knew no better, buildings of stone must necessarily have been very rare. Such edifices could not be common till after the invention of tools proper for hewing stones, and of machines for raising and transporting them with ease. For this reason I am fully persuaded, that the houses in these first

^m Hom. Iliad. l. 9. v. 381. &c.; Herod. l. 2. n. 99.; Diod. l. 1. p. 18.; Syncell. p. 54. 55.

ⁿ Paus. l. 1. c. 38. p. 93. l. 8. c. 38. l. 10. c. 6.; Euseb. præp. evang. l. 10. c. 10. p. 489. C.; Syncell. p. 64.

^o Acosta, hist. nat. des Indes, l. 6. c. 14; Hist. des Incas, t. 1. p. 60. & 265.

^p Hist. des Incas, *loco cit.*

^q Ibid. p. 266. 267. t. 2. p. 62.; Acosta, *loco cit.*

^r Hist. des Incas, *loco cit.* ^s Ibid. p. 264. & 268.

^t Ibid. t. 2. p. 62.; Voyag. au Perou, par D. Antoine d'Ulloa, t. 1. p. 391.

^u Ibid. ^x Hist. gen. des voyag. t. 1. p. 332.

^y Voyag. de la compagnie des Ind. Holl. t. 4. p. 378.

cities were generally of wood or mud. This is still the manner of building in the greatest part of Persia², and Turkey, and almost over all Africa, and the East³.

If we will believe the ancients, the art of hewing stones, and building houses of them, was known to some nations in the most distant ages. The Egyptians gave the honour of this discovery to Toth⁴ the successor of Menes⁵. They even attributed the construction of a pyramid to Venephes⁶, one of their first kings⁷. Besides, it is not surprising that the art of dressing stone, and building with it, was so soon found out in Egypt. The nature of that climate has forced those who inhabited it in all ages, to apply to that study. Egypt wants wood fit for building, and even for burning⁸. We see, that, in the very first ages, the Egyptians were obliged to supply their furnaces with straw and stubble⁹. Building with stone and marble, therefore, was absolutely necessary to that people. Accordingly we find, that they had very early discovered methods of transporting these materials with ease. Almost from the commencement of their monarchy, they had drawn canals¹⁰ from the Nile, which communicated with, and fell into one another. It appears also, that wheel-carriages were very ancient in Egypt. Chariots were pretty common there in the age of Joseph¹¹.

The first monuments of architecture, properly so called, must have been very clumsy and unpolished. It cannot be supposed, that regularity and the beauties of proportion were very exactly observed in them. We cannot, however, determine the true state of this art, or the progress it had made in the period we are now considering. We have nothing to enable us to form a right judgment of it. Yet I am inclined to think, that, toward the conclusion of these ages, the inhabitants of certain

² Chardin, t. 1. p. 134.; Tavernier, t. 2. l. 4. c. 4. p. 16.; Gemelli, t. 1. p. 447. t. 2. p. 266. 267.

³ Voyag. de Damp. t. 3. p. 47.; Bibl. rais. t. 1. p. 57.; Hist. gen. des voyag. t. 1. p. 231.; Lettr. édif. t. 16. p. 32.

⁴ Syncell. p. 56. B.

⁵ Marsh. p. 39. Antiquity acknowledges Menes first king of Egypt.

⁶ See Syncell. p. 54. 55.

⁷ Marsh. p. 45.

⁸ Voyag. d'Egypte par Granger, p. 13.

⁹ Exod. c. 5. v. 7.

¹⁰ See *supra*, c. 1. art. 1. p. 93.

¹¹ Gen. c. 45. v. 19.

countries began to have some idea of beauty and magnificence in building.

At first the only object of building was necessity. But as mankind were civilized, their knowledge increased, and they began to think of ornament. Architecture then called in the assistance of several other arts. By means of the chisel they substituted pillars of stone and marble in the place of those wooden stakes which had supported the roofs of their first cabins. The other embellishments of architecture were of the same sort, a kind of substitutes to the pieces of wood which were first employed in building. When these came to be executed in stone, they were enriched with several ornaments. By these means, this art attained by degrees to elegance and perfection.

In the period of this first part of our work, several nations had an idea of designing, carving, and sculpture^{*}. They probably soon made use of these arts in embellishing their buildings. Profane historians speak of temples, palaces, and other structures raised by the first sovereigns of Egypt, Nineveh, and Babylon¹. To these we may add the building of the tabernacle by the Israelites in the wilderness, in which we see Moses used pillars with bases and chapiters. This points out gradual improvements. For they would first begin with using pillars quite plain, afterwards they would add bases, and chapiters by way of ornaments. Moses probably took the idea of this kind of embellishment from the Egyptians². In a word, the grandeur and magnificence of several structures, raised by the Egyptians in the beginning of that period which is to be the subject of the second part of our work, put it beyond all doubt, that architecture had made very rapid progress in Egypt; and give room to think, that the ornamental part of it was in some degree known and practised in several countries in the period we are now upon.

^{*} See *infra*, c. 5.

¹ Herod., l. 2. n. 99.; Diod. l. 1. p. 16. 18. & 55. l. 2. p. 115. 120.; Jul. African. apud Syncell. p. 54. 55.

² See part 2. b. 2. sect. 1. c. 3.

C H A P. IV.

Of the discovery and working of metals.

TH E discovery of metals was probably owing to accident. But we owe the art of working them, and applying them to all their various uses, to the necessities and industry of those nations who lived by agriculture. Without the art of working metals, agriculture never could have made any great progress, or have arrived at that degree of perfection in which we find it in the very first ages, in some countries. We may say the same of all the mechanic arts. They owe almost all their improvements to the discovery and use of metals.

How, when, and by whom was this discovery made? It is difficult to answer these questions. Nor is it easier to explain the manner in which mankind found out the art of working metals, and applying them to their various uses. The ancients looked upon the invention of metallurgy as something so divine and marvellous, that they ascribed it to celestial beings *.

Metals were discovered, and they understood the art, even of working iron, before the deluge °. But that dreadful calamity deprived the greatest part of mankind of this, as well as of other arts. All antiquity agrees in saying that there was a time, when the use of metals was unknown to mankind †. This is the more credible, as ancient authors speak of several nations to whom this important discovery was unknown ‡. We see that these people used stones, flints, the horns of animals, the bones of beasts and fishes, shells, reeds, and thorns for all the purposes for which civilized nations use metals at

* See Syncell. p. 14. ° Gen. c. 4. v. 22.

† See Plat. de leg. l. 3. p. 805.

‡ Agatarchid. apud Phot. c. 48. p. 1369.; Diod. l. 3. p. 213.; Strabo, l. 15. p. 1025. & 1032. l. 16. p. 1123. 1124.

present ^r. The savages set before us a striking picture of the ignorance of the ancient world, and the practices of primitive times. They have no idea of metals ^r, and supply the want of them by the means I have just now mentioned ^r.

Metallurgy, however, was an early discovery amongst the nations who applied to agriculture. Necessity forced them to study the working of metals, in order to form those tools they stood in need of. We see the use of metals established in Egypt and Palestine, a few ages after the flood. The Egyptians gave the honour of this discovery to their first sovereigns ^u; the Phœnicians to their ancient heroes ^x. These traditions are fully confirmed by the authority of the sacred books. In the days of Abraham, metals were common in Egypt and in several countries of Asia ^y. The art of metallurgy had even then arrived at great perfection ^z. Nor is it surprising, that this art made such rapid progress in Asia and Egypt. These countries were the first where mankind settled, and formed themselves into powerful monarchies ^a. I am however of opinion, that, in these ages, they understood only the working of a few metals, as gold, silver, and copper. Iron, that metal so necessary, and at present so common, was long either quite unknown, or but little used by ancient nations. Let us trace the steps of the human mind on this important article, and collect all the light which ancient history affords us concerning the discovery and improvements of this necessary art. Let us also compare what probably happened in the primitive times, with what we see practised in some places in our own age.

^r See Herod. l. 7. ; Diod. l. 3. p. 185. ; Strabo, l. 15. p. 1050.

^r Hist. gen. des voyag. t. 2. p. 643. ; Voyag. de Coreal, t. 1. p. 228. ; Mœurs des sauvages, t. 2. p. 109.

^r See Lettr. édif. t. 11. p. 420. 421. t. 20. p. 224. t. 25. p. 124. t. 18. p. 237. ; Voyag. de Frezier, p. 64. 109. & 214. ; Hist. nat. de l'Islande, t. 2. p. 219. ; Voyag. à la baye d'Hudson, t. 2. p. 167. ; Histoire gen. des voyag. t. 1. p. 9. & 22. ; Rec. des voyag. au Nord, t. 1. p. 220.

^u Agatarchid. apud Phot. c. 11. p. 1341. ; Diod. l. 5. p. 19. l. 3. p. 184. ; Palaph. in chron. Paschal. p. 45.

^x Sanchoniat. apud Euseb. p. 35. B.

^y Gen. c. 13. v. 2. c. 23. v. 15. c. 24. v. 22. & 53.

^z See *infra*, p. 153. & chap. 5. ^a See above, b. 1. p. 36.

The discovery of metals would not cost the first descendents of Noah much searching for. It would not be necessary to dig into the bowels of the earth for what presented itself upon the surface. A thousand events, of which we might quote many examples, would put metals into the hands of the first men ^b. The devastations occasioned by great rains and inundations, were probably the first means of the discovery of metals. In some countries, after violent rains, metals are found almost in every brook ^c. Torrents pouring from the mountains, deposit great quantities of gold upon the sand and gravel in the valleys ^d. In the kingdom of Achem, it is not necessary to dig into the earth for that metal; it may be picked up on the sides of the mountains, and in gutters made by the torrents ^e. The ancients speak also of several rivers very famous for rolling down gold, silver, copper, and tin, in their waters ^f. We know of several rivers which still enjoy this advantage ^g.

As to mines, several accidents might discover to mankind the mineral substances which the earth concealed in her bosom. Thunder might break off pieces of rocks or mountains, and thereby betray the precious metals they contained ^h. A gold mine was discovered in Peru by such an accident about the end of the last century ⁱ. Sometimes the winds, by tearing up trees by the roots, have discovered metals and minerals ^k. It is well known how the famous mines of Potosi were discovered. An Indian climbing up some rocks covered with trees and bushes, took hold of a small tree, which grew in a cleft of a rock, and pulled it up by the root; he observed something

^b See Alonso Barba, l. 1. c. 23.; Alex. ab Alex. gen. dier. l. 4. c. 9.; Johnston thauemat. class. 4. c. 26.; Journ. des scav. May 1683, p. 90.

^c Voyag. de Frezier, p. 121.; Voyag. de Coreal, t. 1. p. 101.; De la fonte des mines par M. Hellot, p. 13. & 35.

^d Voyag. d'Anson in 4^o p. 42.; Lettr. édif. t. 4. p. 92.; Rep. des lettr. t. 14. p. 1318.; Voyag. de Coreal, t. 1. p. 235.

^e Lettr. édif. t. 2. p. 73.; Hist. gen. des voyag. t. 10. p. 458.

^f See below, p. 147. ^g See below, p. 147.

^h See Justin. l. 44. c. 3.; Alonso Barba, l. 1. c. 23. p. 86.; Hellot de la fonte des mines, p. 43.

ⁱ Voyag. de Frezier, p. 147.; Voyage au Perou par D. Ant. d'Ulloa, t. 4. p. 532.

^k Alonso Barba, l. 1. p. 85.

glitter in the hole, which upon examination he found to be an ingot of silver ¹. Sometimes also torrents carrying away the earth by their impetuosity, lay open the veins of metals ². Labourers, in digging, have sometimes hit, by accident, upon very rich mines ³. It was in this manner, as Justin relates, that the gold mines which formerly rendered Spain so famous, were discovered ⁴. In a word, small branches sometimes appear upon the surface, and point to the veins below ⁵.

When men afterwards came to search for mines, the observations they had made on the appearance and qualities of the soil where metals had been originally found, would serve them for a guide. Nature furnishes several indications and external marks, by which it is not very difficult to discover mines. These soils have particular characteristics which are easily observed and remembered ⁶. Their colour, particularly, is different from that of other soils, and gives strong indications of the minerals they contain ⁷. By this, and the observation of the herbs they produce, a guess may be formed even of the kind of mineral they conceal ⁸. These soils are for the most part barren, rough, and steep ⁹. Very often they produce no grass ¹⁰. A careful inspection of one mine therefore would lead them to discover all others.

If it is easy to imagine how the first men might discover metals, it is difficult to conceive, and still more difficult to explain how they arrived at the art of working them. It is only by means of fire that we can prepare metals for our use. But before they can be forged, they must be melted and refined,

¹ Acofta, hift. nat. des Indes, fol. 139. v.

² Alonso Barba, l. 1. p. 85.; Acofta, fol. 140. *verso*.

³ Lettr. édif. t. 4. p. 151.; Hellot de la fonte des mines, p. 7. 23. & 62.

⁴ L. 44. c. 3.

⁵ Hellot de la fonte des mines, p. 71.; Alonso Barba, t. 2. p. 269.

⁶ See Hellot de la fonte des mines, p. 71.

⁷ Voyag. de Frezier, p. 102.; Alonso Barba, t. 2. p. 287.

⁸ Alonso Barba, t. 1. c. 1. p. 3. & 24.; Senac. nouv. cours de chymie, t. 2. p. 314.

⁹ Agatarchid. apud Phot. c. 11. p. 1340.; Strabo, l. 3. p. 216. A.; Plin. l. 33. feét. 21. p. 617. feét. 31. p. 621.; Voyag. de Frezier, p. 151. 152.; Lettr. édif. t. 17. p. 441.; Voyag. de V. le Blanc, part 1. p. 261. part 3. p. 105. & 118.; Asia di Barros, deca 1. l. 10. fol. 186.; Voyage de Coreal, t. 1. p. 296.; Acofta, hift. nat. des Indes, fol. 131. 132. & 137. 138.

¹⁰ Voyag. au Perou par D. Ant. d'Ulloa, t. 1. p. 523.; Journal des observ. du P. Feuillée, t. 2. p. 589.

that is, separated from all other substances which are mixed with them, and cast into masses of pure metal, which may be afterwards divided at pleasure. These operations are very difficult, and require no little dexterity, knowledge, and reflection. Fusion is the first means used for these purposes.

We may suppose that vulcanos might possibly give men some idea of metallurgy. The streams of melted minerals, which from time to time are thrown up from these natural furnaces *, might probably put men upon trying to work metals by the help of fire. What renders this conjecture the more credible, is, that those persons who are represented as the inventors of metallurgy, both by the fables and histories of antiquity, lived in countries famous for vulcanos †.

Ancient writers, however, have pretty generally agreed in ascribing this discovery to the burning of forests, where the soil contained metals; the violence of the fire, according to them, having melted the metals, they flowed out and diffused themselves upon the surface of the ground ‡. It was in this manner, according to the old traditions of Greece, that iron was discovered on Mount Ida §. It was to a similar accident they attribute the discovery of the silver mines in the Pyrenees. These mountains, say they, were formerly covered with thick woods. Some shepherds accidentally set them on fire, which continued to rage for a good many days, and made streams of pure silver flow from the sides of the mountains down into the plain ¶. Such events are very possible, nay even probable. I imagine however, that the idea of employing fire in the working of metals, and separating them from other substances, was suggested by some other accidents more frequent and familiar.

It is related of certain sailors, that having landed on an un-

* Buffon, hist. nat. t. 1. p. 502. 503. 507. 515. 533.; Alonso Barba, t. 2. p. 205.

† See Diod. l. 5. p. 335. 336.; Strab. l. 6. p. 423.; Paus. l. 10. c. 11.; Bochart, Chan. l. 1. c. 12. p. 431.

‡ Lucret. l. 5. v. 12. & 41. &c.

§ Marm. Oxon. ep. 11.; Seneca, ep. 90. p. 405.; Clem. Alex. Strom. l. 1. p. 401.

¶ Arist. de mirab. auscult. p. 1157. E.; Diod. l. 5. p. 358.; Strab. l. 3. p. 217. 218.; Athen. l. 6. p. 233.

known island, and kindled a fire at the foot of a mountain, they observed silver flowing from it ^c. It is reported also, that the leader of a new colony settled not long ago in Paraguay, observing a stone of uncommon hardness, and spotted with black, took it and threw it into a very hot fire; some time after, he saw a quantity of as good iron as any used in Europe running from the fire ^d. Once more, it is reported, that the captain of a Spanish ship, being obliged to put in at a desert island, there repaired his ship's furnace. In making the hearth, he used several layers of earth. When he arrived at Acapulco, the whole crew were greatly surprised to find under the ash-pan of the furnace, a solid mass of gold, which the violence of the fire had melted and separated from the earth ^e. I am inclined to think that some such accidents as these might give the first hint of the art of working metals. Perhaps some person by chance exposed earth or stones, which contained metals, to the heat of a violent fire, and took notice of a liquid matter running from it, which took different shapes, and became hard as it cooled. This would excite curiosity. The experiment would be repeated; and thus by degrees they would find out the art of melting metals.

I will confess however, that after all the conjectures we can form about these and the like accidents, the mind would not be entirely satisfied; some doubts would still remain, if we supposed that these first mines were in the same state, and had the same qualities with ours at present. The refining of metals in our times, commonly requires much labour, and many precautions; but we ought to consider that this operation probably was not near so difficult in the times we are now speaking of. In the first ages after the deluge, metals were commonly found on the surface of the earth, or at a very moderate depth, whatever way they were brought thither, whether by torrents, or by some fire which made them run from the mountains. Now metals, in this state, are not much mixed with other bodies, and consequently are much more easily melted and refined, than those which are brought from the bosom of the

^c Anc. relat. des Indes & de la Chine, p. 6.

^d Lettr. édifiantes, t. 11. p. 419. 420.

^e Mem. de Trevoux, Sept. 1713, p. 1547.; Gemelli, t. 5. p. 296. & 297.

earth ^f. The ancients speak of several countries where they picked up gold which had no need of refining ^g, and we know of some where this may still be done ^h. In some parts of Africa ⁱ they find virgin gold so pure, that it is cast into ingots of an excellent quality by fire alone, without the help of any dissolvent. Several writers mention grains of natural gold of a prodigious bigness ^k. Some have even weighed more than an hundred marks ^l. A modern traveller says, he had seen a massy branch of gold, a cubit in length. This ingot, which was very pure, had been found in the river Couefme, in the kingdom of Mozambique ^m. They find frequently in Peru pieces of virgin-gold, some weighing more than eight or ten marks ⁿ, and some more than an ounce ^o. This gold needs no melting nor refining ^p. In the kingdom of Macassar, besides gold dust, which they gather in great quantities, they pick up in the valleys where the torrents have flowed, ingots of pure gold without any mixture ^q. In several countries, even at present, they gather gold which requires no artificial refining, only by washing away the earth, in certain places, by streams of water ^r. This operation is very simple, and needs neither the chisel, the hammer, the mill, nor quicksilver. There is nothing to do but to wash the earth well, and a few small pieces of wood are sufficient to stir and mix it properly ^s. This gold got by washing, was not unknown to the ancients ^t. Lastly, the gold which is found in great quanti-

^f See Plin. l. 33. sect. 20. p. 616.; Acoſta, hiſt. nat. des Indes, fol. 145. &c.

^g Ariſt. de mirab. auſcult. p. 1153. D.; Agatarchid. apud Phot. c. 149. p. 1369.; Diod. l. 2. p. 161. l. 3. p. 213.; Strabo, l. 3. p. 216. l. 4. p. 290. & 319.; Plin. l. 33. ſect. 20. 21. p. 616. 618.

^h See Alonſo Barba, t. 1. p. 99.

ⁱ Hiſt. gen. des voyag. t. 2. p. 642.

^k Ariſt. de mirab. auſcult. p. 1153. D.; Plin. l. 33. ſect. 22. p. 618.; Strabo, l. 3. p. 217.; Voyage de Frezier, p. 151.; Alonſo Barba, t. 2. p. 287.; Journal du P. Feuillée, t. 1. p. 468.; Hiſt. gen. des voyag. t. 5. p. 224.; Merc. de France, Juill. 1726, p. 1676.

^l Albert M. l. 4. de mineral. c. 7. p. 275.

^m Voyag. de Pyrard, part 2. p. 150.

ⁿ Acoſta, hiſt. nat. des Indes, fol. 134. verso.; Voyage de Frezier, p. 76.

^o Ibid. p. 99. ^p Acoſta, fol. 131. recto.

^q Rep. des lettr. t. 14. p. 1318.

^r Voyag. de Frezier, p. 76. & 101. 102.

^s Ibid. p. 101.

^t See Diod. l. 5. p. 350. 351.; Strabo, l. 3. p. 217.; Plin. l. 33. ſect. 21. p. 616.

ties ^a in certain rivers, is very fine ^x, and requires little preparation. There is even some found so very pure, that it is ductile and malleable the moment it is taken out of the water ^y.

Men at first would find no greater difficulty in refining silver and copper. In those days they would meet with these metals naturally pure and unmixed with other bodies, which render the smelting-art so difficult at present. They knew formerly ^z, and we know now ^a, of rivers which roll silver and copper in their streams. Frequently too these metals are brought to light by torrents, and spread upon the surface of the earth ^b. They are then found even in large masses, pure and without any mixture. Threads of pure silver have been often found in clues, resembling burnt lace ^c. In some places of Peru they pick up pieces of virgin-silver, only by digging lightly in the sand ^d. Some of these pieces weigh sixty, and even one hundred and fifty marks ^e. This virgin-silver is malleable, and requires no further preparation, before it is wrought ^f. It is the same with copper. The ancients speak of countries where that metal was found naturally pure ^g. In several parts of Canada ^h and Louisiana ⁱ, they gather red copper very pure. Masses of this metal, weighing one hundred and

^a Alonso Barba, t. 1. p. 100. 101.; Acosta, fol. 135.; Conq. du Perou, t. 1. p. 342. Voyag. de D. Ant. d'Ulloa, t. 1. p. 513.; Voyag. de Pyrard, part 2. p. 149. 150.

^x Plin. l. 33. sect. 21. p. 616.; Lettr. édif. t. 2. p. 73. t. 4. p. 92.; Voyag. de Pyrard, p. 150.

^y Relat. de la riv. des Amazones par le P. d'Acugna, t. 3. p. 80.

^z Strabo, l. 3. p. 220.; Philostrat. de vita Apollon. l. 3. c. 54.; Photius, bibl. p. 1027.

^a Lescarbot, hist. de la N. France, p. 94.; Hist. de las guerras civil. da Granada, p. 2.; Anc. relat. des Indes & de la Chine, p. 20.; Hist. gen. des voy. t. 6. p. 50. & 484.; Hellot de la fonte des mines, p. 15.

^b Alonso Barba, t. 2. p. 447. & 451.; Plin. l. 31. sect. 47. p. 663.; Isidor. origin. l. 16. c. 21.; Rec. des voyages au Nord, t. 10. p. 155.; Journal des scav. Novem. 1676, p. 128.; Hist. nat. de Colonne, t. 2. p. 514.

^c Voyage de Frezier, p. 145.

^d Voyage au Perou par D. Ant. d'Ulloa, t. 1. p. 527.

^e Ibid. p. 529. ^f Lettres édif. t. 18. p. 216. 217.

^g Arist. de mirab. auscult. p. 1151. A.

^h Rec. des voyages au Nord, t. 9. p. 179.

ⁱ Hist. nat. de Colonne, t. 2. p. 514. Near the lake Ponchartrain are some mountains whose centre are of pure copper.

fifty quintals ^k, fit for working, have been discovered. It appears often in slender threads or branches ^l.

Even when they afterwards came to dig metals from mines, they would at first find little difficulty in refining them. They ordinarily find metals quite pure, or with very little mixture, in the tops of mines ^m. It is even not uncommon to meet with pure ⁿ, and even malleable ^o gold in some mines. They tell of a gold mine discovered not long ago in the Brazils, so rich, that they got that metal near the surface of the earth ^p. Travellers assure us, that, in several parts of Monomotapa, they find gold by digging in the earth the depth of two or three feet ^q. At the discovery of the famous mine of Potosi, the vein was so rich, that the metal appeared like a rock above ground as high as a spear. It was a kind of ridge upon the top of the mountain, for three hundred feet in length, and thirty in breadth ^r. In the mine of Salcedo, at first they found lumps of silver, which gave them no further trouble than cutting them with the chisel ^s. In the year 1713, they discovered on the mountain Ucuntaya in Peru, a prodigious crust of solid silver, which yielded several millions ^t. The mine of St Elisabeth was almost entirely of pure silver ^u. In the same district, there was another mine whose surface was pure copper ^x. In the mines of Rouffillon, the workmen find sheets of red copper, formed by nature, very fine and ductile. These sheets are either scattered amongst the gravel, or as it were pasted against the stones ^y. In a word, we ought to judge of the ancient mines, by those which are sometimes

^k Voyag. de Frezier, p. 76.

^l Heliot de la fonte des mines, p. 33.

^m See Strab. l. 3. p. 290. & 319.; Hist. gen. des voyag. t. 2. p. 530. 531. & 640.; Acosta, hist. nat. des Indes, fol. 145. *recto*.; Voyag. au Perou par D. d'Ulloa, t. 1. p. 374.; Heliot de la fonte des mines, p. 25. 26. & 68.

ⁿ Plin. l. 33. sect. 20. p. 616.; Merc. de France, Juillet 1731, p. 1809.; Janvier 1732, p. 157.

^o Acad. des scien. 1718, M. p. 87.; Hist. gen. des voyag. t. 2. p. 640.

^p Merc. de Franc. July 1726, p. 1676.

^q Hist. gen. des voyag. t. 10. p. 329.

^r Acosta, hist. nat. des Ind. fol. 140. *verso*.

^s Voyag. de Frezier, p. 245.; Voyag. au Perou par D. Ant. d'Ulloa. t. 2 p. 207.

^t Voyag. au Perou par D. Ant. d'Ulloa, t. 1. p. 513. t. 2. part 2. p. 286.

^u Alonso Barba, t. 1. p. 72. ^x Ibid. p. 108.

^y Le Monnier, observat. d'hist. nat. p. 210.

discovered

discovered in countries which are but little frequented. Pure and malleable metals are commonly found in mines which have never been wrought ^z. The French, on their first arrival in Canada, met with a mine, where they gathered many pieces of copper, very fine and beautiful ^a. In several places of Siberia, stones are found on the surface of the earth, which contain a great deal of copper ^b. In Hudson's bay there is a mine of red copper, so rich and pure, that without using fire, and only by beating it between two stones, the inhabitants make it into all sorts of utensils they have occasion for ^c.

Mankind then, in these first ages, might procure metals without so much skill and labour as are now necessary in digging mines and refining metals ^d. Besides, the consumption could not be very great, so that the resources we have mentioned would be sufficient for a long time.

As the world became more populous and civilized, the consumption of metals would be greater. We are assured both by scripture and profane history, that the use of metals was very common in Asia and Egypt, about the middle of the period we are now examining. We cannot suppose that this plenty was altogether the gift of nature. By this time, no doubt, men had begun to dig mines, and no longer procured them with the same facility as at first. It then became necessary to study the art of separating metals from the other bodies with which they are commonly mixed.

Besides, it is not enough to expose metals to the fire as they come out of the mine. Many other precautions must be taken to extricate them from the foreign bodies with which they are intangled. The ore must not only be pounded and washed, but it must also be mixed with certain earths, and certain salts, and in a certain proportion. These are the only means of smelting and refining the greatest part of metals. Those who first attempted to refine metals, must often have met with the same accidents which happened to the ancient inhabitants of Peru in smelting silver ore. The Incas had silver mines in many

^z Hellot de la fonte des mines, p. 73.

^a Lescarbot hist. de la N. France, p. 402. & 455.

^b Rec. des voyag. au Nord, t. 8. p. 381.

^c Rec. des voy. t. 3. p. 316. ; Merc. de Franc. Fevr. 1719, p. 49.

^d See Agricola de nat. fossil. l. 8. *ist.*

of their mountains, but at first they knew not the art of refining that metal. They only put the ore into the fire, but instead of smelting they saw it evaporate in smoke. Necessity, the mother of invention, after several experiments, furnished them with a method of preventing this accident. They thought of mixing a certain quantity of lead with the silver. The experiment was made, and succeeded to their wish *.

As ores became more refractory, it would become necessary to study the art of using fire to the best advantage, and of gradually increasing its force and activity. It would cost them much study to find out what kind of fuel was most proper, whether coals, turf, wood, &c. Furnaces were probably invented very early, but bellows were not. That instrument, so simple and so useful, was certainly unknown in these first ages, and is still so to a great many nations †. They must therefore have supplied the want of this instrument by some means or other; but we have no tradition on that subject.

Neither can we speak with any certainty of the methods used for smelting and refining metals in these first ages. We know but little of the proceedings of these ancient metallurgists: I shall lay before the reader the manner in which the Egyptians refined their golden ore, as it is described by Agatharchides ‡, and Diodorus §. This people affirmed that they had learned the working of metals from their first sovereigns ¶. Their practice, therefore, may throw some light on the proceedings of the most ancient ages.

The Egyptians began by pounding the ore, till they had reduced it to about the bigness of a grain of millet. They then threw it under millstones, which made it as small as the finest meal. They next spread this dust on large boards, a little inclining; and sprinkled it plentifully with water, to carry off all the gross terrestrial particles. After repeating this watering several times, the workmen rubbed the remaining

* Hist. des Incas, l. 8. c. 25. p. 362.

† Voy. de Coreal, t. 1. p. 212.; Hist. des Incas, t. 2. p. 61.; Hist. gen. des voyag. t. 3. p. 182.

‡ Apud Phot. c. 11. p. 1340.

§ L. 3. p. 182.

¶ Agatharch. p. 1342.; Diod. p. 184.

matter for some time between their hands, wiping it with little sponges, till nothing was left but the gold dust quite clean. Another set of workmen then took this gold, and put it into earthen pots, where they mixed with it, in certain proportions, lead, salt, a little tin *, and barley meal. They then poured the whole into vessels, which they covered and luted with great care, setting them in a refining furnace for five days and five nights successively. Then taking them out and letting them cool, they removed the heads of the vessels, and found the gold quite pure, with very little waste. Such was the method used by the Egyptians, from time immemorial, for refining gold. In general, it does not appear that the ancients made any use of quicksilver, in refining either gold or silver †. They employed lead ‡ as a menstruum, and by frequent meltings made metals perfectly pure at last. The Peruvians who made great use of gold and silver, knew no better method of refining them ¹.

In whatever way the secret of smelting and refining metals came to be found out, it was known very early. Job speaks of the manner of trying gold by fire ¢. The great quantity ¢ of gold and silver which we find diffused amongst some nations in the most distant ages, must convince us, that the arts of working mines, of smelting and refining metals, must have been very soon discovered in several countries. The scriptures take notice, that Abraham was very rich in gold and silver °. Even then, these metals were used in commerce as the common sign or price of all other commodities. The four hundred shekels of silver which Abraham gave to the sons of Heth for the burying-place ¤, the money which Jacob committed to his sons when he sent them down into Egypt to buy corn ¶, demonstrate the great antiquity of metals in commerce.

* There are tin mines in Africa. Voyage de V. le Blanc, part 2. p. 80.; Hist. gen. des voyag. t. 1. p. 25.

† See Plin. l. 33. sect. 32. & les notes de Perrault sur Vitruve, l. 7. c. 8.

‡ See Plin. ibid. sect. 19.; Suid. voce *ἐξελίκε φουσάτ*. t. 1. p. 765.

¹ Hist. des Incas, t. 2. p. 315. 316. ¢ C. 23. v. 10.

° See Diad. l. 1. p. 18. ° Gen. c. 13. v. 2. ¶ Ibid. c. 23. v. 16.

¤ Ibid. c. 43. v. 12.

It must have been some time before men discovered the art of forging metals, or working them into proper shapes, for the uses they designed. At first, I imagine, they had no other way of shaping metals, but by casting them in moulds. Strabo^r speaks of a nation who made use of cast copper, not knowing how to forge it; and there are several nations at this day no less ignorant^s. But people of industry and ingenuity would search for a more commodious method of working metals, and more suitable to the several uses for which they designed them. They would soon observe, that all metals, excepting lead and tin, after the first melting, acquire a very sensible softness and flexibility in the fire. This would give them the hint of working them in that state of heat, into many various forms. In consequence of this, they would contrive instruments proper for forging metals on coming out of the fire. Flints and stones were probably the first tools they used in this work. Modern travellers meet with nations who have no other instruments for forging metals^t.

These rude and clumsy methods would not be followed long by any ingenious inventive people. Finding the inconvenience of these tools of stone or wood, it would soon occur to them that metal would afford the most proper instruments for working metals. At first they would cast their tools in moulds, rough and imperfect enough no doubt. The Peruvians had not the hammer. They supplied its place with a kind of tools made of a mixture of copper and brass, of a square form, and yet made so as to be conveniently grasped^u. The first tools of metal would be something of this sort, till by degrees becoming more and more perfect, they would at last be able to form metals into the most exact and commodious forms. The invention of the hammer, the anvil, and the pincers, was placed by the ancients in the remotest ages. The Egyptians attributed these inventions to Vulcan, one of their first sovereigns^x. Others give this honour to Cyniras^y, the

^r L. 15. p. 1044. ^s Hist. gen. des voyag. t. 1. p. 231.

^t Rec. des voyages au Nord, t. 3. p. 316.; Hist. gen. des voyages, t. 5. p. 172.
Merc. de France, Février 1719, p. 43. & 49.; Bibl. univ. t. 2. p. 378.

^u Hist. des Incas, t. 2. p. 61.

^x Palæphat. in Chron. Alex. p. 45. C.; Cedren. p. 19. D.; Suid. t. 2. p. 85.

^y Plin. l. 7. sect. 57. p. 413.

father of Adonis, which makes them no less ancient. In a word, the hammer and anvil are mentioned in the book of Job^z.

The art of forging metals, without all doubt, was known in Egypt, and some parts of Asia, in the most distant times. We see arms of metal in use in Palestine, a few ages after the flood. Moses says, that Abraham drew his sabre to sacrifice his son Isaac^a. The ancient patriarchs shearing^b their sheep, is a further proof, that the fabricating of metals was then well understood. They knew even then how to execute works in gold and silver, which require delicay and exactness^c. In a word, we see every thing relating to metals, the places where they are formed, the manner in which they are wrought, &c. exactly described in the book of Job^d. The great degree of perfection to which the art of working metals was brought in the days of Moses, is alone a sufficient evidence of its great antiquity. The artists could not have acquired such exquisite skill as to execute the works he speaks of^e, if the first discovery of their art had not been very ancient.

Mankind would begin with working such metals as were most easily procured and fabricated. Gold, silver, and copper, possess both these qualities. I have already observed, that considerable masses of these metals were sometimes found pure and without mixture, that they were easily melted and refined. For these reasons, gold, silver, and copper, were the first metals that were wrought. At first, men employed gold and silver to uses for which they do not seem to be designed by nature^f. There was an old tradition among the Egyptians, that the art of working gold and copper being found out in Thebais, they first made arms of these metals to exterminate the wild beasts, and afterwards tools to cultivate the earth^g. The Egyptians did then, as we know several nations have done,

^z Chap. 41. v. 15. & 27.

^a Gen. c. 22. v. 6.

^b Ibid. c. 31. v. 19. c. 38. v. 12.

^c See *infra*, chap. 5.

^d Chap. 28. I have already said, that I believe Job to have been cotemporary with Jacob. See our dissertation at the end of this volume.

^e See part 2. b. 2. sect. 1. c. 4.

^f See Lucret. l. 5. v. 1269.; Servius in *Æneid*. l. 12. v. 87.

^g Diod. l. 1. p. 19.

who put gold and silver to almost all sorts of uses^b. When the Carthaginians arrived the first time in Betica*, the inhabitants of that country employed silver for the lowest and most common usesⁱ. The history of the discovery of America confirms the truth of these ancient traditions. The Spaniards saw with surprise, the Peruvians and Mexicans make use of gold and silver for all sorts of purposes^k. This practice was common in several other nations of America^l. But no metal was more commonly used by the ancients than copper.

The discovery and working of these metals I have been speaking of, were no doubt of great advantage to mankind; but yet not to be compared with that of iron. There is no metal of so great use in the exercise of all the arts, or has contributed so much to their improvement. But the finding and working of iron must have been a very late and difficult discovery. Without doubt, it was the last of all metals mankind were acquainted with, or knew how to use.

Nature has indeed diffused iron over all the world; but still there is no metal so difficult to be known and discovered. Nothing discloses it. The most part of other metals frequently show themselves such as they are, that is, in the real form of metals. The ores of gold, silver, and copper, have commonly a certain colour and brightness which discover them. But iron is almost always concealed under appearances, which do not indicate any metal to vulgar eyes. It is not commonly found but in the form of stone, and deep under ground. Even in those countries where it most abounds, and is most exposed to view, the people trample upon it without knowing it; it seems only a blackish sand or gravel, having no marks to distinguish it from other kinds of matter, which are not iron, and yet have the same appearances. One must be a good natural philosopher to know this metal in the mine, or to find

^b See Herod. l. 3. n. 23.; Heliod. Æthiop. l. 9. 10.; Rep. des lettr. t. 23. p. 521.

* That is, Portugal.

ⁱ Strabo, l. 3. p. 224.

^k Voyage de Coreal, t. 1. p. 250.; Conq. du Pérou, t. 1. p. 76.

^l Voyage d'Anson in 4^o. p. 42.; Riviere des Amazones par le P. d'Acugna, t. 3. p. 183.; Conq. du Pérou, t. 1. p. 24.; Voyag. de Coréal, t. 1. p. 280.

it out in the earths and sands which contain it. How could it occur then to men, who had never seen iron, had no idea of it, and were not looking for it? How could they extract this metal from that sand and gravel, by a chain of operations as much hidden from the mind as the materials were from the eye.

In reality, the greatest obstacle to the use of iron was the difficulty of making it. Iron, of all metals, is the most difficult to bring into fusion. Besides, one single melting is sufficient to render gold, silver, or copper ductile and malleable. It is not so with iron. A piece of this metal once melted, is as untractable as ever, and not more ductile than a flint. In this state it is still hard and brittle, and cannot bear the hammer, either cold or hot. The file, the chisel, and the graver, can make no impression upon it ^m. In order to forge iron, therefore, it was necessary to find out the art of softening it, and rendering it ductile. To do this, it must be melted a second time, then beat with very heavy hammers; this mass must be put into the furnace, and heated till it is upon the point of fusion, then put again in this state under the hammer; this operation must be repeated several times: at last this hard and brittle mass, by frequent heating and hammering, becomes forgeable ⁿ. All these operations much more complicated than those on other metals, must have long retarded the use of iron.

I will confess, that some lucky accident might, and probably did, assist men at first in this discovery. However ignorant they were in metallurgy, they might follow the indications which nature presented them, proceed from step to step, by little and little. They must have done so, since we see that they arrived at last at the art of forging iron. But this knowledge could not be obtained, but by the concurrence of a great many happy chances and favourable conjunctures which fall out but seldom. Subterraneous fires, the burning of forests, and all the other events which might have been the means of discovering the fabrication of gold, silver, and copper, would

^m Art de convertir le fer par M. de Réaumur, p. 2. & 390.—395.

ⁿ Réaumur, *ibid.* p. 2. 3.

be of no service with respect to iron. The history of Mexico and Peru affords us an evident proof of all this. These nations had long possessed the art of working gold, silver, and copper, but had not the least idea of iron^o, though it abounds in these countries^p.

All nations were originally in the same state of ignorance. We have incontestable proofs of this, independent of the testimony of historians. A kind of stones commonly called *thunder-stones**, are still preserved in a great many cabinets. They have the shape of axes, plough-shares, hammers, mallets, or wedges†. For the most part they are of a substance like that of our gun-flints, so hard that no file can make the least impression upon them. We ought particularly to take notice, that they are almost all pierced with a round hole in the place most proper for receiving a handle; and this hole is made in such a manner, that the handle being once forced in, will not come out again but with great difficulty, as it is with our hammers. It is evident from inspection alone, that these stones have been thus wrought by the hands of men. The holes for inserting the handles prove their destination, and the several uses that were made of them‡. This is something more than a mere conjecture.

It is well known, that tools of stone have been in use in America from time immemorial^q. They are found in the tombs of the ancient inhabitants of Peru^r, and several nations

^o Alonso Barba, t. 1. p. 111. & 118.; Hist. des Incas, t. 1. p. 103. t. 2. p. 61. & 319.; Acofta, hist. nat. des Ind. fol. 132.; Voyag. au Pérou par D. Ant. d'Ulloa, t. 1. p. 386. & 391.; M. de l'acad. de Berlin, 1746, p. 451.

^p Hist. des Incas, t. 2. p. 61.; Alonso Barba, t. 1. p. 109. &c.; Hist. de la Virgin. p. 58. & 75; N. Relat. de la France equinox, p. 19.; Lettr. édif. t. 11. p. 419. 420.

* In Latin *Ceraunia*.

† We may see the shape of them in Adrian Tollius, Histor. gemmar. & lapid. l. 2. c. 261. p. 483.

‡ Pliny seems to acknowledge this, when he says *similes eas esse securibus*, l. 37. sect. 51.

^q Mœurs des sauvag. t. 2. p. 109. 110.; Hist. de la Virginie, p. 312. &c.; Lettr. édif. t. 20. p. 224. t. 25. p. 124.; Voyage de Damp. t. 1. p. 93.; Nouv. relat. de la France equinox. p. 152.

^r Voyage au Pérou par D. Ant. d'Ulloa, t. 1. p. 384.; Voyage à l'équateur, par M. de la Condamine, p. 104.; Mém. de l'acad. de Berlin, 1746, p. 451.

use them at this day ^r. They shape and sharpen them upon a kind of grindstone, and, by length of time, labour, and patience, form them into any figure they please. They then fit them very dexterously with a handle, and use them nearly in the same manner we do our tools of iron ^r. Asia ^r and Europe ^r are strewed with these sort of stones. They are frequently found. There must then have been a time, when the people of these countries were ignorant of the use of iron ^r, as the people of America were before the arrival of the Europeans.

Let us add to these evidences, the testimony of ancient authors. They are unanimous in declaring, that the first generations had little or no knowledge of iron, and that they were the latest in learning to work this of any metal. Anciently they employed copper for all the purposes for which we now make use of iron ^r. Arms, tools for husbandry and the mechanic arts, were all of copper for many ages. The writings of Homer leave us no room to doubt of this. We see, that, at the time of the Trojan war, iron was very little used. Copper, in a word, supplied its place; and this metal was used both in making of arms ^r, and all kinds of tools and utensils ^b. It was the same for many ages amongst the Romans ^c. Almost all the arms and tools of that people now extant, are of copper ^d. The most convincing proof, that the use of copper

^r Mœurs des sauvages, t. 2. p. III.; Aloyf. Cadam. navigat. c. 66.

^r Mœurs des sauvag. t. 2. p. 110.; Lettr. édif. t. 20. p. 224.

^u Carmania, a province of Persia near Chaldea, is the place, according to Agricola, where they find most of these stones. De nat. fossil. l. 5. c. 13. p. 262.

^x Adrian. Tollius, *loco cit.* c. 262.; Journ. des scav. Decemb. 1751, p. 778.; Diari. Ital. D. B. de Montfaucon, c. 28. p. 440.; Mem. de Trévoux, Février 1713, p. 289. 290.

^y See also l'hist. de Genghizcan par Petis de la Croix, p. 8.

^z Hesiod. Theog. v. 722. 726. 733. Op. v. 150. 151.; Lucret. l. 5. v. 1286.; Varro *apud* August. de civ. Dei, l. 7. c. 24.; Schol. Apollon. ad l. 1. v. 430.; Isidor. origin. l. 8. c. 11. p. 71. C. l. 16. c. 19. 20. l. 17. c. 2.

^a Iliad. l. 4. v. 511. l. 13. v. 612. l. 23. v. 560. 561.; Odyss. l. 21. v. 423.; Hérod. Théogon. v. 316.; Plut. in Thes. p. 17. C.; Paus. l. 3. c. 3. p. 211.; Athen. l. 6. p. 232.

^b Iliad. l. 5. v. 723. &c. l. 23. v. 118.; Odyss. l. 5. v. 244.

^c Dionys. Halic. l. 4. p. 221.; T. Livius, l. 1. n. 43.

^d See le Rec. d'antiquit. par M. le C. de Caylus, t. 1. p. 237. 238. & 261. 262.; Mém. de Trev, Septembre 1713, p. 1535. 1536. 1537.

preceded that of iron, is, that the ancients used brass in all their religious ceremonies *. The Sabin priests cut their hair with a knife of brass †. The high priest of Jupiter at Rome, made use of sheers of copper for the same purpose ‡. When the Etruscans had a mind to build a new city, they marked out its limits with a culter of brass §.

Further, this was not a practice peculiar to the Greeks or Romans; it was common to all the nations of antiquity. The arms of the Egyptians were commonly of brass ¶. In the time of Agatharchides, they found chisels and hammers of copper in the rubbish of old mines **. Job speaks of bows of brass ††. The scriptures say, that when the Philistines had Samson in their power, they bound him with fetters of brass ‡‡. Herodotus assures us, that the Massagetæ had their axes, pikes, quivers, hatchets, and their very horse-trappings, of this metal §§. In England °, Switzerland, Germany, but more especially in the northern kingdoms ¶, arms, rings, and other instruments of brass, are often found in old tombs.

It was the same in America, the arms and tools of that part of the world were of copper ¶. Hatchets of this metal have been found in the ancient tombs of the Peruvians †. These hatchets differ nothing from ours in shape *. In Japan, even at this day, all things which in other countries are made of iron, are there made of copper or brass ‡. In a word, every thing proves, that no metal was so much used in ancient times

* Schol. Theocrit. ad Idyll. 2. v. 36.; Macrob. Sat. l. 5. c. 19. p. 511. 512.; P. Festus, voce *Acieris*, p. 4.; Plut. in Thes. p. 17. C.

† Macrob. Sat. l. 5. c. 19. p. 512. § Serv. ad Æneid. l. 1. v. 448.

‡ Macrob. *loco cit.* p. 512. † Diod. l. 1. p. 19.

§ Apud Phot. p. 1341. & 1344. ¶ Chap. 20. v. 24.

¶ Judg. c. 16. v. 21. according to the Hebrew. ° L. I. n. 215.

° Mem. de Trevoux, Février 1713, p. 288. 292. 295.

¶ Nouvell. litt. de la mer Baltique, ann. 1699, p. 88. ann. 1700, p. 14. 24. 333.; Journ. des scav. Decemb. 1751, p. 778.; Rudbek Atlant. part 3. c. 7. p. 145.; Scheuzer. physiq. sacr. t. 6. p. 102.

† Acoft. hist. nat. des Indes, l. 4. c. 3. fol. 132. *recto*.; Conq. du Pérou, t. 1. p. 24. & 87.

‡ Voyag. au Pérou par D. Ant. d'Ulloa, t. 1. p. 384.; Mem. de l'acad. de Berlin, 1746, p. 451.; Mem. de Trev. Juillet 1703, p. 1115.; Rec. d'antiq. par M. le C. de Caylus, t. 1. p. 168.; Hist. des Incas, t. 2. p. 120.

* D. Ant. d'Ulloa. in his account of the figure, *loco cit.*

† Kämpfer, hist. du Japon, t. 1. p. 74.

as copper. Many reasons contributed to this. Copper is found in great quantities, is easily taken from the mine, not difficult to smelt, and next to gold and silver, is the most ductile of all metals.

But copper is a soft metal and easily blunted. It would not therefore of itself be able to resist the efforts which were necessary in several of the works in which it was employed. Some means must then have been found to harden it, before they could perform the same works with copper, which we perform at present with iron. Tempering was the means which it would seem the ancients most commonly used for this end. The first writers of antiquity assure us of this ^t, and their testimony is confirmed by the examinations which have been made by artists on some Greek and Roman antiquities of copper ^u. We cannot even doubt of this after the inquiries and experiments which have been lately made by the Count de Caylus on the tempering of copper. By his operations he obtained a kind of copper, melted, forged, allayed, tempered extremely hard, susceptible of the grindstone, and, in one word, possessed of all the properties of iron ^x. Copper may be hardened also by mixing alloy with it. This operation was known to the ancient inhabitants of Peru. They used it to harden their tools and arms, which were all of copper ^y.

In maintaining however that, originally, copper supplied the place of iron, I do not pretend to affirm that this last metal was altogether unknown in the ages we are now upon. Several testimonies give us reason to believe that some nations knew the art of working iron in very ancient times. There was a tradition among the Egyptians ^z that Vulcan had taught

^t Tzetzes ad Hesiod. Op. & Dies, v. 150. p. 48.

^u Rec. d'antiquit. par M. le C. de Caylus, p. 242. & 246.; Montfaucon diar. Ital. c. 5. p. 70. c. 12. p. 167.

^x Caylus ibid. p. 242.

^y Alonso Barba, t. 1. p. 118.; Rec. d'antiquit. par M. le C. de Caylus, t. 1. p. 250. 251.

^z Chron. Pascal, p. 45. C.; Cedren. fol. 19. D. There is a manifest contradiction in Cedrenus. For after he has said that Vulcan taught the Egyptians to forge arms of iron, he adds, that having obtained pincers, by his prayers, from heaven, he used them in working copper.

See also the passage of Agatarchide, *supra*, p. 158. note ^k.

them

them to forge arms of iron. The Phœnicians also ranked among their most ancient heroes, two brothers, who were supposed to have discovered iron, and the manner of working it^a. The Cretans, as Diodorus relates, placed both the discovery of iron, and the art of working it, in the most remote periods of their history^b. The inhabitants of Mount Ida pretended to have learned the art of working this metal, from the mother of the gods^c. In a word, Prometheus in Æschylus boasts of having taught mankind the fabrication of all metals^d. Some authors ascribe the discovery of the art of working iron, to the Cyclops^e, and some to the Chalybes^f, a very ancient people, renowned for their skill in working this metal^g. The Chalybes inhabited the south coasts of the Euxine sea, between Colchis and Paphlagonia^h. Clemens Alexandrinus pretends that the art of making iron malleable was found out by the Noropesⁱ. This nation was situated in Pannonia, along the banks of the Danube, between Noricum and Mœsia. Without entering into any discussion of these traditions, which are all liable to great difficulties and contradictions; it appears from the book of Job, that the art of working iron was known in some countries in the ages we are now speaking of^j. The books of Moses also furnish us with a very strong proof of the antiquity of this discovery. From the manner in which this legislator speaks of iron, it appears that metal must have been long in use in Egypt before his time. He celebrates the great hardness of it^k; takes notice that the bedstead of Og King of Bashan was of iron^l; he speaks of mines of iron^m;

^a Sanchon. apud Euseb. p. 35. C.

^b L. 5. p. 381.

^c Sophocl. apud Strab. l. 10. p. 725.; Diod. l. 17. p. 726.; Auctor Phoronid. apud Schol. Apollon, ad l. 1. v. 1129.; Strabo, l. 10. p. 726. l. 14. p. 966.

^d In Prometh. *vincto*, v. 501.

^e Plin. l. 7. sect. 57. p. 414.

^f Ammian. Marcell. l. 22. c. 8. p. 312.; Schol. Apollon, ad l. 2. v. 375.; Tzetzes, chil. 10. v. 338.

^g Æschyl. in Prometh. *vincto*, v. 113.; Virg. Georg. l. 1. v. 58.

^h See Martiniere's dictionary, *voce* Chalybes, art. 3. and Danville's map of the retreat of the ten thousand.

ⁱ Strom. l. 1. p. 365.

^j Chap. 19. v. 24. c. 20. v. 24. c. 28. v. 2. e. 40. v. 13. c. 41. v. 18.

^k Levit. c. 26. v. 19.; Deut. c. 28. v. 23. & 48.

^l Deut. c. 3. v. 11.

^m Ibid. c. 8. v. 9.

he compares the severity of the servitude of the Israelites in Egypt, to the heat of a furnace for melting that metal^a. But what is most worthy of our attention is, that they then made swords^b, knives^c, axes^d, and tools for cutting stones^e, of iron. To make the blades of swords and knives, they must have known the arts of tempering and turning iron into steel. These facts seem to me sufficient to prove that the discovery of iron, and the arts of working it, were extremely ancient in Egypt and Palestine,

But at the same time that we acknowledge the antiquity of working iron in some few places, we must confess that in these ages the use of it was neither very common, nor very much diffused. All antiquity is unanimous in declaring, that all nations we know any thing of, once used copper in the place of iron, and that this practice subsisted many ages, in some very enlightened and civilized countries. It may not be improper to take notice, that we do not find that Moses made use of iron in any part of the tabernacle in the wilderness, or Solomon in any part of the temple at Jerusalem.

Having thus spoke of those arts which were invented through necessity, we must now proceed to say something of those which owed their birth to leisure and luxury, the fruits of that abundance which is produced by agriculture. The number of these last are more considerable in this period than we could have imagined. Some of the first nations knew the arts of designing, of casting metals, and of engraving. They had also some notions of sculpture, and several other arts. The magnificence which reigned in some countries a few ages after the flood, necessarily supposes the knowledge of these arts. In general, I must take notice, that, in the course of my researches, I have all along observed with astonishment, that the merely pleasing arts have been as ancient in their origin, as those of the most indispensable necessity. Jubal, the inventor of musical instruments, was brother to Tubal-cain the inventor of metallurgy^f. I shall confine myself at present to speak of the origin

^a Deut. c. 4. v. 20.

^b Num. c. 35. v. 16.

^c Ibid. c. 27. v. 5.

^d Levit. c. 1. v. 17.

^e Gen. c. 4. v. 21. 22.

^f Deut. c. 19. v. 5.

of designing, of the goldsmiths and sculptors arts. Music, and some other arts, will be considered in that article, wherein we design to treat of the manners and customs of those ages which are the subject of this first part of our work.

C H A P. V.

Of the origin of designing, engraving, of goldsmiths work, and sculpture.

IT would be equally difficult and unprofitable, to ransack the shades of antiquity, to find the precise origin of the arts of designing, of casting and engraving metals, of carving wood, stone, &c. Nothing can be said with certainty of the origin and first improvements of these arts, but that they are extremely ancient. Man is born an imitator: we may observe in all nations a strong inclination to copy the objects which are before them. Even the greatest savages, who have the least connection and intercourse with the civilized part of mankind, have some idea of the art of designing, that is, of imitating (rudely enough indeed) the natural objects with which they are surrounded *.

The shadows of bodies suggested the first idea of designing. Some person who had either more acuteness or more leisure than others, stopping to consider this effect, it came into his head, to trace the outlines of one of these shadows exactly, with some instrument or other. When the shadow had vanished, he observed that these outlines bore a resemblance to the real object ^u which had produced the shadow.

What chance had thus discovered, was soon formed into a regular art. After some time, they would attempt to represent objects without the assistance of their shadows, and by

* Voyage de J. de Lery, p. 277. ; Lescarbot, hist. de la Nouv. Franc. p. 692. ; Mœurs des sauvages, t. 2. p. 41.

^u Acad. des inscript, t. 19. p. 252.

a little practice, the eye alone would guide the hand in copying the proportions and likenesses. Designing at first was quite imperfect, and consisted only in drawing the outlines of bodies. By and by the artists began to endeavour to represent the inner parts which were not distinguished by the shadow, such for example (if it was a head) as the eyes, nose, mouth, &c. As they had learned from the shadow to represent the outlines of bodies, they would see the necessity of attempting to represent the inner parts; and they would succeed in this attempt, by disposing the figures of these parts properly within the outlines *.

Coals, chalk, &c. would furnish men at first with instruments for drawing upon wood, stone, &c. They would practise too upon sand, clay, and other soft bodies. By and by they would endeavour to engrave upon harder substances, which might retain the figures, with flints, and other sharp instruments. The shape which soft bodies assume when put into harder, and the impression which hard bodies leave upon the soft, would soon suggest the hint of casting in moulds, and making impressions. In a word, these rough draughts of sculpture, which nature so often exhibits to the view, would give them the idea of carving in wood, stone, &c. Thus began the arts of the engraver, carver, goldsmith, and sculptor; arts which, I imagine, preceded that of painting.

The first men might acquire pretty soon the knowledge of some of these arts. They might learn to engrave on wood and stone, and even to carve and cut these into figures, before they knew the art of working metals. The example of several savage nations confirms this conjecture. The people who inhabit the banks of the great river of the Amazons, have some notions of sculpture, though they are quite unacquainted with the use of metals †. It is the same in several other countries ‡. Every thing therefore inclines us to think, that those arts of which we are treating in this chapter, had

* Acad. des inscript. t. 19. p. 252.

† Relat. de la riviere des Amazones par le P. d'Acugna, t. 3. p. 104. 105.

‡ N. relat. de la France equinox, p. 140.; Laet, hist. des Ind. Occid. l. 2. c. 16. p. 57.

their origin in the remotest ages. It only now remains to propose some conjectures on their gradual improvement, and to examine to what degree of perfection they might have attained in the ages we are now examining.

After that of drawing upon flat surfaces, the art of casting in moulds, I imagine, was next practised. It was sufficient to give men a hint of this, to observe the shapes assumed by soft substances, when they happened to fall into the cavities of more compact and solid bodies. The same thing would give them an idea of moulds; and they would follow the examples set them by nature. They would search for earth of such a nature, that, though it were solid, might be easily softened and kneaded. The savages are not ignorant of this art of moulding ^a.

At first they would mould only clay, plaister, &c. but ingenious and industrious nations would not continue long to use only such brittle materials for these kind of works. The desire of rendering their productions more solid and durable, would put them upon contriving how to make them of metals. We see this by the present Eliczer made to Rebecca. It consisted of ear-rings and vessels of gold and silver ^b. It even appears, that these kind of jewels were then pretty common in some parts of Asia. Moses says, that Jacob made the persons of his household give him up all their ear-rings ^c. Judah gave his signet and his ring to Tamar in pledge ^d. The use of such things was equally ancient in Egypt. Pharaoh, in raising Joseph to the dignity of his prime minister, gave him his ring, and put a gold chain about his neck ^e. We know also that this patriarch commonly used a silver cup ^f. We may join to these testimonies of sacred history, that of profane authors. We see from their writings, that the art of working gold and

^a N. Relat. de la France equinox, p. 140. ; Lescarbot, hist. de la N. France, p. 777.

^b Gen. c. 24. v. 22. & 53.

^c Ibid. c. 35. v. 4.

^d Gen. c. 38. v. 18. It is probable this ring was engraved. The Hebrew word  *Khatham*, signifies a signet. Now, a signet must have some distinctive mark or engraving. See les mem. de Trev. Sept. 1750, p. 2051.

^e Gen. c. 41. v. 42. See below, b. 6. chap. 2.

^f Gen. c. 44. v. 2.

silver was practised in Asia ^a and Egypt ^b in the most remote ages.

By insensible degrees, the art of casting would give birth to that of sculpture in wood, stone, and marble. This operation is an imitation of nature, which frequently presents us with a rough kind of sculpture. Besides, the figures in this art bear an exact resemblance to the real objects we converse with. The first attempts in sculpture were probably in clay. Men would begin by employing the materials in most common use. The necessity of procuring themselves vessels, had taught men to work earth and clay, They would naturally use these also in their works of imitation. There was no need of many tools to execute such kind of works. It is with the hand they form them, and the fingers are of more use than all other tools. Three or four pieces of wood at most are sufficient to finish such works ^c. The plainness of this practice, made Pasiteles ^d, a famous statuary of antiquity, say, “ That “ the invention of modelling clay into figures, had given birth “ to the art of making statues of marble and bronze.” Originally in all nations the statues of their gods were only of moulded clay.

The transition from figures of clay, to those of wood and stone, must have been somewhat difficult; yet it appears that mankind were not long in making this transition. The worship of idols is extremely ancient ^e. It was spread over all Asia and Egypt, in the days of Abraham ^f and Jacob ^g. Idolatry, no doubt, contributed much to the improvement of sculpture. For though the representations of the objects of public adoration were at first coarse, and ill performed, yet civilized nations would soon learn to make the images of their gods in a more artificial and elegant manner. The Tera-
phim which Rachel stole from her father Laban ^h, were, according to the best interpreters, little images in human shape. Many other things prove the great antiquity of sculpture in

^a Diod. l. 2. p. 122. 123. ; Plin. l. 31. sect. 15. p. 614.

^b Diod. l. 1. p. 19. ^c Felibien, principes d'architect. l. 2. c. 1.

^d Plin. l. 35. sect. 45. p. 711. ^e Joshua, c. 24. v. 14. ^f Id. Ibid.

^g Gen. c. 31. v. 19. c. 35. v. 2. & 4.

^h Gen. c. 31. v. 19. & 30.

Asia and Egypt. Not to mention the testimonies of profane authors ^p, God forbade his own people to make unto themselves graven images ^q, or gods of silver, or gods of gold ^r. He commanded them also to break all the images of the gods which the Canaanites worshipped ^t. Moses speaking to the Israelites in the wilderness, says, “For ye know how ye have dwelt in the land of Egypt, and how ye came through the nations which ye passed by. And ye have seen their abominations and their idols, wood and stone, silver and gold ^u.” This text proves that these nations had long been in possession of the arts of carving and sculpture. I might speak too of the golden calf, which was made after models the Israelites had seen in Egypt. But I imagine I have sufficiently proved that sculpture had its origin in the most remote antiquity.

This art must have been very imperfect in these first ages. Sculpture requires the knowledge of so many other arts, that we have reason to think its beginnings were very coarse, even among those people who afterwards excelled in it the most. We have no means of judging of the productions of the first nations. We may however form some idea of them, from what ancient writers say of the first attempts in sculpture among the Greeks, who had learned that art from the Egyptians ^v. Their statues originally were little better than shapeless blocks. A long time after, their knowledge reached no further than to make coarse figures, with their arms hanging straight down, and fastened to their bodies. Their legs joined together, without expression, attitude, or elegance ^x. We know too that the famous statue of Memnon, so much admired in Egypt, was in this taste ^y. Such probably were the first essays in sculpture, in all countries.

If we could give credit to what certain authors say of the works executed by Semiramis, we should be obliged to ac-

^p See Sanchoniat. apud Euseb. l. 1. p. 39.; Herod. l. 2. n. 4. 143. 149.; Diod. l. 1. p. 19. & 62. l. 2. p. 122. 123.

^q Exod. c. 20. v. 4.

^r Ibid. v. 24.

^s Exod. c. 23. v. 24.

^t Deut. c. 29. v. 16. 17.

^u See Diod. l. 1. p. 109.

^x See part 2. b. 2. sect. 2.

^y Philostrat. de vita Apollon. l. 6. c. 4. p. 233. & 234.

knowledge that these first ages were much more intelligent than we have represented them. This princess, say they, caused the images of all kinds of animals to be made in relieve on the walls of her palace, which being afterwards coloured according to nature, seemed to be alive. These figures were more than four cubits high. In the middle appeared Semiramis piercing a tyger with her dart, and near her, Ninias slaying a lion with his lance. In another part of the same palace, the statues of Jupiter, Belus, Ninus, Semiramis, and of all the principal officers of state, were erected. These statues, say they, were all of bronze ^z.

They add further, that three statues of massy gold, representing Jupiter, Juno, and Rhea, had been placed on the summit of a temple, built in the midst of Babylon, by the orders of that princess. Jupiter was upright, and in the attitude of walking; this statue was 40 feet high, Rhea was seated in a chariot of gold, before her two lions, and at her side two enormous dragons of silver. Juno was standing on her right hand; she held a serpent by the head, and in her left, a sceptre adorned with precious stones. Before these three statues was placed a table of gold, forty feet long and fifteen broad. On this table were set two urns, two pots for perfumes, and three cups of gold, each of an enormous weight ^a.

These works, however grand they may appear, deserve but little attention, in comparison of those, which, they tell us, this great Queen caused to be performed on Mount Bagisthan. This mountain on one side presented a ragged rock, sixteen furlongs in perpendicular height ^{*}, full of inequalities. Semiramis began by ordering it to be made smooth; and afterwards she caused her own figure, attended by one hundred of her guards, to be cut upon it ^b.

We should be obliged to acknowledge, that sculpture had made very great progress in these first ages, if the facts I have now mentioned were well attested. But I am very far from thinking they are so. They appear to me more than doubtful,

^z Diod. l. 2. p. 121. 122.

^a Diod. l. 2. p. 123.

^{*} That is, $\frac{3}{4}$ of a league, allowing 24 stadia to a league, and 125 paces to a stadium.

^b Diod. l. 2. p. 126, 127.

We cannot but observe, that a strain of exaggeration runs through the whole narration, and gives it the air of a fable. We may even remark, that Diodorus ^c and Strabo ^d, who declare that many monuments attributed to Semiramis still existed in their time, such as magnificent highways, bridges, canals, aqueducts, &c. make no mention of the marvellous works at Mount Bagisthan. What Diodorus, the only ancient author who speaks of them, relates, is only upon the authority of Ctesias, and every one knows how much the credit of Ctesias has been suspected. In a word, there is no mention of these works in an ancient inscription to the honour of this princess, which has been preserved by Polienus ^e. In this we find a pretty long detail of the works performed by Semiramis; would a work so extraordinary, so incredible, as this of carving a large mountain, have been left out of the list * ?

It is true, Father Martini relates, that there is a mountain in China, cut into a statue of such prodigious bigness, that you may distinguish its nose and eyes at the distance of some miles ^f. Father Kircher speaks also of two other mountains in that country, the one of which has the shape of a dragon, and the other of a tyger ^g.

From these facts, it might be concluded, that the works said to have been performed by Semiramis at Mount Bagisthan, might have existed, since works equal, if not superior to them, are to be seen in China. But, in my opinion, all these relations are equally false. But, though the reality of such works should be admitted, it might still be doubted, whether they had been executed in the ages we are now examining. It is well known there were several queens of Assyria named Semiramis ^h. These authors have attributed to the great Semiramis, the spouse of Ninus, what was perhaps performed in an-

^c L. 2. p. 126. 127.

^d L. 16. p. 1071.

^e Stratag. l. 8. c. 26.

* The ruins of Persepolis may perhaps be mentioned as an exception to this. But there appears nothing in them comparable to the works of Semiramis, as described by Diodorus.

^f Atlas Sin. p. 69.

^g China illustr. l. 4. c. 4. p. 231.

^h See Cedren, p. 15.; Canon. ap. Phot. n. 9. p. 423.; Euseb. chron. l. 2. p. 80. other

other age, and by some other princes¹. This confusion of names probably occasioned the error I am now refuting; an error which it is likely gained ground from that natural fondness for the marvellous so peculiar to the Greeks, and which their best writers can hardly guard against.

I shall say nothing of painting at present. I am persuaded, that art, in the sense we now understand the word, had no existence in the ages we are now upon. They might possibly scrawl with colours some grotesque figures without rule, or method, as the savages do at present². But what may properly be called the art of painting, was not then known. We shall, however, leave the critical discussion of this point to the second part of our work.

Designing, and its kindred arts, serve at present merely for amusement. But at their origin, designing, engraving, &c. answered more necessary and important purposes. They were the only means which mankind then knew of recording their thoughts, and transmitting their knowledge to posterity. Drawing for a long time supplied the place of letters, which we use at present. We shall illustrate this matter a little, and finish what we had to say concerning the arts in this period, by the discovery of writing.

C H A P. VI.

*Of the origin and progress of Writing to the year 1690
before Jesus Christ.*

MAnkind in all ages and in all countries, have endeavoured to find out methods of preserving the memory of such events and discoveries as they imagined would be interesting to posterity. But it was a long time before the art of writing, that is, of painting words, and speaking to the eyes,

¹ See Berof. *apud* Jos. in Appion, l. 1. c. 6.; Euseb. chron. l. 2. p. 80.

² Voyage de J. de Lery, p. 277.; Mœurs des sauvages, t. 2. p. 44.

was found out. A good many different expedients were successively employed, to preserve the remembrance of important facts. It was the practice of the primitive times, to plant a grove, to raise an altar, or heap of stones, to institute games and festivals, and to compose a kind of songs on occasion of memorable events. The place also where any remarkable scene had been acted, commonly received a name commemorative of that event and its circumstances.

The histories of all nations furnish a number of proofs and examples of these primitive practices. We see the patriarchs raising altars in the places where the Lord had appeared to them, planting groves, setting up monuments in memory of the principal events of their lives, and giving such names to the places where they happened, as might recall the remembrance of them¹. Profane authors mention customs of the same kind². From the fragment of Sanchoniatho, we learn, that rough stones and posts were the first memorials of the Phœnicians³. Great heaps of stones were formerly to be seen near Cadiz, which were said to be the monuments of Hercules's expedition into Spain⁴. The ancient inhabitants of the North preserved the remembrance of great events, by setting up stones of a prodigious bigness in particular places⁵. This is still the most common method of the savages of America, who are strangers to the art of writing⁶. The negroes, who are equally ignorant of this art, have invented certain symbolical marks, which supply the place of inscriptions. For example, they place arrows over the graves of men, mortars and pestles over the graves of women⁷. The custom of giving names to places relative to the events which have happened in them, is found amongst the nations of America⁸.

¹ Gen. c. 12. v. 9. c. 26. v. 25. c. 35. v. 7. c. 21. v. 31. & 33. c. 26. v. 20. &c.

² See Diod. l. 4. p. 259. & 267.; Strabo, l. 3. p. 259. & 260. &c.

³ See Fourmont, reflex. critiques sur les hist. des anc. peuples, l. 2. p. 7.

⁴ Strabo, l. 3. p. 202.

⁵ Bibl. anc. & mod. t. 2. p. 248.

⁶ Journ. des scav. Mars 1681, p. 46.; Voyage à la baye d'Hudson, t. 2. p. 151.

⁷ Hist. gen. des voyages, t. 2. p. 468.

⁸ Hist. des Incas, t. 1. p. 19. 214. 338.

The institution of festivals in ancient times had two objects, the honour of the gods, and the perpetuating the memory of important events. If we peruse the calendars of ancient nations, we shall find, that all their festivals had been instituted with a reference to some passages in their histories. The sacred books furnish many examples of this[†]; to say nothing of profane historians.

Some other practices which prevailed in certain countries, must be reckoned amongst the means which were anciently employed, to preserve the memory of events and discoveries. The Chinese before the reign of Fo-hi, that is, in the most ancient ages, made use of small cords with a certain number of knots, which, by their different distances and combinations, not only enabled that people to recall the remembrance of their own ideas, but also to communicate their thoughts to others[‡].

The Peruvians knew no other way of writing but this. Cords of various colours, with a certain number of knots upon them, smaller or greater, and differently combined, formed registers which contained the annals of their empire, the state of their public revenues, the rolls of their taxes, and their astronomical observations, &c.[§]. The negroes of Juida make use of this method at present[¶]. We may add to these practices, that of those people who supplied their want of writing, by small pieces of wood differently notched, which serve them for authenticating their legal deeds and contracts. I have mentioned this practice in the article of government[‡]; it still subsists in Albania[‡], and Siberia[‡]. The tallies of wood which are at present used by our bakers, are a faithful representation of these rude contrivances.

But the composing of little poems or songs, was the method most universally used in the first ages, for preserving the me-

[†] Exod. c. 12. v. 26. 27. See Calmet, t. 2. p. 137.

[‡] Martini hist. de la Chine, l. 1. p. 21.

[§] Hist. des Incas, t. 2. p. 27. & 35.; Conquête du Perou, t. 1. p. 22.; Acofta, hist. des Indes, l. 6. c. 8. fol. 285.

[¶] Hist. gen. des voyag. t. 4. p. 373. & 394.

[‡] Book 1. cap. 1. art. 1. p. 28.

[‡] D'Herbelot, bib. orient. voce Arnauth, p. 129.

[‡] Rec. des voyag. au Nord, t. 8. p. 422.

mory of past events. These poems contained the principal circumstances of the events they designed to transmit to posterity. We see this practice established in the remotest ages, and amongst all nations of both continents, as the Egyptians^c, Phœnicians^e, Arabians^f, Chinese^g, Gauls^h, Greeksⁱ, Mexicans^k, and the people of Peru^l.

We find such historical songs amongst the most barbarous and savage nations. The ancient inhabitants of the North^m, of Brazilⁿ, Iceland^o, Greenland^p, Virginia^q, St Domingo^r, and Canada^s, had preserved, in poems of this kind, such events as they thought worthy of the knowledge of posterity. They sung them at their public festivals and solemnities. I have already shown in the article of government, that the first legislators promulgated and transmitted their laws by forming them into odes or songs^t.

All these different practices were employed in primitive times, to perpetuate the memory of great events, and the knowledge of important discoveries. Tradition then supplied the place of writing, fathers explained to their children the motives of such practices and institutions, and informed them of the events which had occasioned them^{*}.

^c See Strabo, l. 1. p. 34.

^d Clem. Alex. Strom. l. 6. p. 757.

^e Sanchoniat. *apud*. Euseb. l. 1. p. 38. A.

^f Job c. 36. v. 24.

^g Lettr. édif. t. 19. p. 477.

^h Tacit. de mor. Germ. n. 2.; Biblioth. univer. t. 6. p. 299.

ⁱ Acad. des inscript. t. 6. p. 165.; Tacit. annal. l. 4. n. 43.

^k Theod. de Bry. rer. Americ. t. 2. part 4. p. 123.

^l Hist. des Incas, t. 1. p. 321. t. 2. p. 56. 57. & 145.

I am informed that the Peruvians have a famous ode, which contains the history of the creation, according to their divinity, which they often sing.

^m Bibl. univ. t. 15. p. 380. & 389. &c. Bibl. Anc. & mod. t. 2. p. 241.; M. de Trev. Juin 1703, p. 949. 950. Decem. 1719. p. 125.

ⁿ Voyage de Coréal, t. 1. p. 199. & 203.; Voyage de J. de Lery, p. 248.

^o Bibl. ancien. & modern. t. 2. p. 241.

^p Hist. nat. de l'Islande, t. 2. p. 232.

^q Journ. des scav. Mars 1681, p. 46.

^r Hist. gen. des voyages, t. 12. p. 219.

^s Mœurs des sauvages, t. 1. p. 519.

^t Book 1. chap. 1. art. 1. p. 28. 29.

The use of historical songs continued after the invention of writing. Moses composed one after the passage of the Red sea to commemorate that event. He has preserved one which the Canaanites made on the victory of their king Sihon over the Moabites. Num. c. 21. v. 26.

* The scripture furnishes us a very direct example of these practices. See Exod. c. 12. v. 26. c. 13. v. 8. Josh. c. 4. See also Diod. l. 5. p. 388.; L'hist. de Gengizcan par Petis de la Croix, p. 8.

I have observed already in the article of government, that it was the custom of these primitive times, to transact before witnesses the ordinary affairs of civil life, such as sales, purchases, payments, obligations, &c. "

These practices which I have mentioned, were sufficient for these first ages. Nations were not then populous; they had but few necessities, few arts, and little commerce; consequently their ideas and languages could not be very copious. As mankind grew more numerous, their knowledge and their business increased; and it became necessary to invent more precise and commodious methods of attesting facts, than those which I have mentioned. Different signs have successively been contrived to paint thoughts and represent discourse. It is by the continued researches and repeated essays of the civilized part of mankind in different ages, that the art of writing, properly so called, has at last been found out. But it is impossible to fix the precise epocha, or point out with certainty the origin of this art. These questions have been agitated by an infinite number of critics, both ancient and modern*. To examine their different sentiments, would lead us into endless disquisitions. I shall only represent in a few words, the opinion which seems to me the most probable.

Man enjoys the singular advantage of being able to communicate his ideas by articulate sounds. But these sounds do not reach beyond the time and place where they are pronounced. It was necessary then to find out some method of giving extent and duration to sounds, in order to diffuse and perpetuate our ideas. The only way of doing this was by inventing signs and figures to represent and preserve words. It is impossible to form a just and clear conception of the manner by which mankind arrived at the art of writing, otherwise than by carefully tracing the successive gradations of this art. In this progress we may plainly perceive several different epochas and distinct steps of improvement.

* *Supra*, b. i. c. 1. p. 27.

See Pliny, l. 7. p. 412.

It must be owned, that what we read in Pliny about the invention of alphabetical characters, is full of contradictions. There is no strength nor connection in his reasonings. It is evident the text of this author has been corrupted in this place. I shall say more of this in the article of astronomy.

The first attempt towards writing, taking that term in its utmost extent, was the representation of material objects. I have observed in the preceding chapter, that in all ages, and in all countries, mankind have endeavoured to imitate and copy the several objects which nature presented to their view. The origin of designing is almost as ancient as that of mankind. The idea of it, if we may so speak, seems to be innate. It was natural for the first men to think of employing this art, to make their thoughts visible; they began by drawing a representation of the objects of them. To write, for example, that one man had killed another, they drew the figure of one man stretched upon the ground, and of another standing by him upright, with some instrument of death in his hand. To let you know that somebody had arrived in a country by sea, they drew the representation of a man sitting in a ship; and so of other things.

We may be assured from several monuments of antiquity still subsisting, that the art of writing originally consisted in a clumsy representation of corporeal objects. This kind of writing, improperly so called, was the first the Egyptians used. They began by designing^y. We have reason to think the Phœnicians at first knew no other method^z. Those who have wrote best on the history and arts of the Chinese, have shewn clearly that the modern Chinese characters are derived from this primitive practice of drawing such objects as were capable of it^a. I suspect that it was the same originally among the Greeks, because in their language the same word signifies to *paint* and to *write* ^{*}.

The history of the Mexicans furnishes us with a more direct example of these first essays towards the art of writing. When the Spaniards arrived in Mexico, the inhabitants of the sea-coasts gave advice of it to their Emperor Montezuma, by sending him a large cloth in which they had carefully drawn and painted every thing which they had seen^b. This was the

^y Essai sur les hieroglyphes des Egyptiens, p. 28. 46. 114. 115. & 135.

^z Ibid. p. 26. &c. ^a Ibid. p. 35. &c.

^{*} Γραφειν.

^b Acosta, l. 7. c. 24.; Conq. du Mexiq. l. 2. c. 1. p. 162. 163.

only method these people had of writing their laws and their history.

There is still existing a very curious fragment of this historical painting, which a Mexican explained to the Spaniards, after their conquest of that empire*. The savages present us daily with models of this primitive manner of writing^d, and communicating their thoughts.

It would be quite superfluous to insist on the difficulty and inconvenience of this practice. How much time and pains were necessary to write the least fact, or the shortest discourse? Men contrived to abridge these signs, and instead of drawing a man, a horse, a tree, &c. at full length, they only drew some of their distinguishing parts. By this means they shortened the time, and diminished the enormous bulk of their volumes. We have still left some traces of this shorter way of painting in the writings of Hor-Apollo*. That author says, that anciently the Egyptians represented a fuller of cloths, by painting a man's two feet in water; and that to write fire, they painted smoke rising in the air^f.

This abridged painting was the second step towards a more commodious method of representing thoughts and words. But it still betrays the great ignorance of these ancient times, and proves the original custom of painting the object of their discourse.

The necessity of writing much, and upon various subjects, soon discovered that the painting of objects was not sufficient alone to express a great many of the ideas which we might incline to communicate. There are in fact a great many things which cannot be expressed by this means, such as word, the changes of relations and qualities, and especially the passions and sentiments of living creatures. It became necessary, therefore, to make some improvements and additions to their former practices of painting objects. They began by adding to these

* See l'Essai sur les hierogl. des Egypt. p. 18.

^d See Lettr. édif. t. 17. p. 303. 304.; Voyage de la Hontan, t. 2. p. 193.; Conq. du Perou, t. 1. p. 21.; Voyage à la baye d'Hudson, t. 2. p. 271. 272.; Mœurs des sauvages, t. 2. p. 43. 44.

^e L. 1. c. 65.

^f L. 2. c. 16.

paintings, certain marks and strokes, which, by common consent and agreement, served to signify actions, passions, &c. These marks, though they had no relation to the sounds which men uttered in expressing their ideas *, yet, by their various dispositions and combinations, answered much the same purposes with our letters. Such were probably the successive steps and improvements in the art of writing.

After this, some acute and ingenious nations invented more artificial methods, though still very imperfect and inconvenient. The most celebrated of these was that of hieroglyphics, of which the Egyptians are esteemed the inventors. In this method of writing, one figure represented many things. A scaling-ladder, for example, represented a siege †. Two hands, the one holding a buckler, the other a bow, signified a battle ‡. By this means the art of writing, which originally was only painting, became a mixture of paintings and symbols; the marks which they used signifying something more than the simple representations of objects could do.

This new manner of writing made great progress, and received many improvements. There were various ways of using it. We perceive plainly by the different methods which we know were used, some more some less artificial, that these methods were invented by degrees, and at different times. This manner of writing was very universal. We find it amongst the Egyptians, Phœnicians, Chinese, and Mexican¹, and where-ever we can trace the first progress of arts. The manner of practising it, indeed, in all these different nations was not perfectly the same, and yet all their various methods evidently flowed from one source, viz. the primitive practice of painting the objects of thought. It is highly worthy of our attentive observation, that not only the Chinese in the east, the Mexicans in the west, the Egyptians in the south, but also the Scythians * in the north, the Indians, Phœnicians †, Æthiopians,

* See the figures upon obelisks, and the Mexican paintings, in Thevenot, t. 2.

† Hor. Apollo. l. 2. c. 28.

‡ Ibid. c. 5.

¹ Essai sur les hieroglyph. p. 26. 30. 37. 38.

* Ibid. p. 47.

² Diod. l. 3. p. 176.; Voyage de V. le Blanc, part 2. p. 25.

Etruscans,

Etruscans^m, the savages in Africaⁿ and America^o, have all used the same manner of writing, by drawings and hieroglyphics. Such an universal concurrence cannot be considered as the effect of accident or imitation; we must discern in it the voice of nature speaking in an uniform tone to the gross capacities of the first generations of men*.

But after hieroglyphic writing was carried to the highest perfection it was capable of, there still remained one great and last effort to be made, to find out characters proper for representing words independent of objects. There have been in all ages some happy and inventive spirits, raised up by providence for the improvement and increase of human knowledge. Some of these took notice of the great imperfection of all the methods which had been used to render our thoughts visible and permanent. They perceived the inconvenience of that way of writing, which constantly excited double ideas in the mind, by a confused mixture of words and objects. They took notice further, that the articulate sounds formed by the voice in speaking, were not very numerous. They endeavoured, therefore, to represent these articulate sounds by an equal number of signs. By this means they proposed to paint words by signs,

^m Essai sur les hieroglyph. p. 46.

ⁿ Hist. gen. des voyag. t. . • Lettr. édif. t. 17. p. 258.

^o Essai sur les hieroglyph. p. 46. 47.

Learned men have long been in an error about the first use of hieroglyphics. They imagined, that the Egyptian priests invented them, to conceal their knowledge from the vulgar. But this mistake has arisen from not attending to the change of circumstances. It is easy to prove, that the Egyptians used hieroglyphics at first, only to transmit the knowledge of their laws, their customs, and their history to posterity. It was nature and necessity, not art and choice, that produced the several kinds of hieroglyphic writing. They were an imperfect defective invention, suited to the ignorance of the first ages. The Egyptians used them because they knew not letters. If this people had first invented alphabetical writing, they would have been too sensible of its excellence to use any other.

This error about the use of hieroglyphics came from the Greeks. It was late before they had any intercourse with the Egyptians, when alphabetic characters were in use. The hieroglyphic writing was abandoned by the bulk of the nation. It was then the Egyptian priests (who, like the other learned men of antiquity, endeavoured to conceal their knowledge) retained hieroglyphic writing as a convenient veil. In this manner, after the discovery of alphabetic writing, hieroglyphics became a secret and mysterious way of writing in Egypt.

which, having a direct relation to the sounds which men pronounced, might present no other idea to the mind. For this purpose they invented certain signs, whose property it was to represent words, not things; signs which taken separately, signified nothing, but when joined together formed a precise determinate number of words *.

The inventors of this new way of writing had observed, as I have said, that words were composed of a certain number of sounds. They attempted to represent each of these sounds by a particular sign. In this way of writing, which I shall call the *syllabic*, they used only one character to express each syllable of which a word was composed. As yet they had no idea of vowels and consonants. We use, for example, ten letters to write the word *prostrated*, they used but three characters. This, in my opinion, was the first step men made to express and represent words, otherwise than by painting objects. I suspect, that originally all those nations of Asia known to the ancients under the names of Syrians and Assyrians, used the syllabic way of writing. We may, I think, discern the vestiges of this in an ancient tradition, which ascribes the invention of writing to the Syrians, but acknowledges that the Phœnicians improved, made it more simple, and brought the characters to perfection†. Whatever may be in this conjecture, but few nations have used the syllabic way of writing‡. We know of none at present but the Ethiopians, and some people of India, amongst whom it is still preserved.

This way of writing is really very imperfect. The great multitude of characters of which such alphabets are necessarily composed, must have occasioned much confusion. It must have greatly fatigued the memory, and the different symbols of that kind of writing must have often been confounded. Men

* The difference between the hieroglyphic and alphabetic way of writing consists in this: That one hieroglyphic figure signified a great many things, but one alphabetic character signifies nothing, or at most a simple sound. A number of them must be joined to form a word. Two hieroglyphics joined together, on the contrary, would never form a word, but only a more complicated idea,

† Diod. l. 5. p. 390.

‡ Acad. des inscript. t. 6. p. 614.

§ Mém. de Trev. Mars 1740, p. 480.

sought therefore some method more simple and liable to fewer errors. At last they found out that way of writing, in which the vowels and consonants are expressed separately by so many distinct characters. The great excellence of this invention consists in its simplicity. By a small number of characters repeated and differently combined, we can express all our ideas, and all our words with equal precision and facility. This way of writing is used by almost all nations at present. A sublime invention, which must have cost much labour and infinite reflections !

But how did mankind arrive at this discovery ? How did they pass from hieroglyphics, and even syllabic writing, to alphabetic characters ? This is hard to be conceived ; for hieroglyphics, and even syllabic writing, have no relation to the letters of the alphabet. They must then have entirely changed the nature of the signs which they made use of. It is in vain to consult ancient authors for clearing up this question ; they give us no light into the manner in which this difficult transition was made.

We may imagine that the contracted kind of hieroglyphic writing, of which we spoke above^f, might lead to the still more contracted method of alphabetic letters, which, by their different combinations, express every articulation of the voice in the most easy and simple manner. This conjecture becomes more probable, when we cast our eyes upon the alphabets of some ancient nations. The letters which compose them, appear, both from their forms and names, to have been taken from hieroglyphic signs. By an attentive comparison of the Egyptian letters, which still remain, with the hieroglyphic figures ingraved upon their obelisks and other monuments, it appears that their letters were derived from their hieroglyphics^g. The Æthiopian alphabet, and the Armenian capitals, furnish further proofs of the truth of this assertion. We perceive in them evident vestiges of the ancient hieroglyphic writing^h.

^f See *supra*, p. 175. & 176.

^g Rec. d'antiquit. par M. le C. de Caylus, t. I. p. 70. 71.

^h Essai sur les hierog. p. 40. 41. ; Hist. de la vie & des ouvrag. de la Croze, p. 126. in 12°. Amsterd. 1741.

I shall not insist on the great difference observable in the alphabetic way of writing, in which the words are formed by an assemblage of many letters. We know, that, in most part of the oriental languages, the vowels are not wrote, but only the consonants *; whereas, in all the languages of the west, the vowels and consonants enter equally into the composition of writing.

It is impossible to determine the precise epocha of the invention of alphabetic characters. We see only, that this art was known in some countries, in very ancient times. Alphabetic writing was used in Arabia in the days of Job x. He speaks of it in a very plain and positive manner. We must remember, that, in my opinion, Job was cotemporary with Jacob, and lived in Arabia. We may even suspect y that Moses had learned the art of alphabetic writing in this country, where he lived several years before his mission z. However this may be, from the manner in which this divine legislator speaks of the use of writing, it sufficiently appears, that in his time it was not a discovery absolutely new a. Besides, we cannot doubt that the knowledge of *letters* was very ancient among the Canaanites. Before Joshua's time that people had a city named *Dabir*, which had originally bore the name of *Cariath-Sepher*, that is to say, *City of letters* b.

Alphabetic writing must also have been very ancient in Egypt. Plato says, that Thaut was the first who divided letters into vowels and consonants, mutes and liquids c. I doubt whether this division was known in Egypt in the age in which their chronology has placed Thaut. But what Plato says may be considered as a proof, that it was the common opinion, that alphabetic characters were known to the Egyptians in the age of Thaut, that is, in the earliest ages.

* Some think, however, that in the Hebrew, for example, the *Aleph*, *Jod*, and *Vau* are vowels. This observation may be applied to the other oriental languages.

x Chap. 13. v. 26. c. 19. v. 23. 24. c. 31. v. 35. 36.

y See our dissertation at the end of the last volume.

z Exod. c. 2. v. 15. &c. See also our dissertation on Job.

a See Exod. c. 17. v. 14. c. 34. v. 27. c. 24. v. 4. & 28. Num. c. 33. v. 1. c. 17. v. 18. c. 31. v. 9. 19. 26.

b Josh. c. 15. v. 15.

c In Phileb. p. 374. E.

If we could depend upon what ancient authors have related of Semiramis, the history of that princess would furnish us with still more decisive proofs of the great antiquity of alphabetic writing. Diodorus speaks of an inscription in Syriac characters, which Semiramis caused to be cut upon Mount Bagisthan ^a. The same author speaks of letters wrote to that princess by a king of India ^e. But I have already observed, that there were several queens of Assyria known by the name of Semiramis ^f. For which reason the facts mentioned by Diodorus cannot fix the epocha of the first use of alphabetic writing in the east.

The invention of alphabetic characters must be considered as the most astonishing effort of the human mind. It is one of those sublime discoveries which can be made only by a genius of the first rank. The author, however, of this most noble invention is quite unknown; his name is covered with such impenetrable shades of antiquity, that the most piercing eyes have not been able to discover it. I shall spend no time in this fruitless search; but only examine in what part of the world this art, so excellent and useful, had its birth.

The invention of alphabetic characters most certainly appertains to those nations which were first civilized. These soon came to have need of some means of recording, with ease and readiness, that infinite multitude and great variety of transactions which arise in civil society. Of consequence, they would apply themselves, with earnestness and constancy, to find out some method of painting and preserving ideas and words.

Several nations have formerly disputed the honour of having invented alphabetic writing ^g. I shall not stop to discuss their different pretensions; the greatest part of them are very ill founded. I can see only two ancient nations to which this invention can be ascribed with any appearance of reason;

^a Diod. l. 2. p. 127.

^e Ibid. p. 129.

^f See above, chap. 5. p. 168.

^g See Diod. l. 1. p. 19. l. 3. p. 175. l. 5. p. 290.; Lucan. Pharsal. l. 3. v. 220.; Plin. l. 7. c. 56. p. 412.; Tacit. annal. l. 11. n. 14.; Clem. Alex. Strom. l. 1. p. 362.

the Assyrians * and the Egyptians. All the alphabets which are at present known in the world, are derived from one or other of these two nations. In fact, if we examine with attention the elements of all the alphabets, both ancient and modern, we shall plainly perceive that they are all derived from one and the same origin, excepting only the Chinese characters, which are still, as formerly, real hieroglyphics †. We may say the same of the Æthiopian alphabet, and of those of some nations of India, who, as I have already observed, retain the syllabic way of writing ‡.

But to which of these, the Egyptians or Assyrians, we ought to ascribe the honour of the invention of alphabetic writing, seems to me a question impossible to be decided at present. It appears only from the small remains we have of the writing of these ancient nations, that their letters had a great affinity with each other. They very much resembled one another in

* We ought to comprehend under that name the Syrians, so often confounded with the Assyrians, by the writers of antiquity. See Thesaur. ling. & erudit. Rom. de Gesner. edit. 1749. at the word *Syria*.

I believe too from what Diodorus says, l. 5. p. 390. that we ought to comprehend under the name of Assyrians, the people which were afterwards called Phœnicians by the Greeks.

† If we could believe M. de la Croze, we must except the Armenian characters too. History of his life, p. 126. This is a question I am not a proper judge of; only those who understand the Armenian best, are of a very different opinion from M. de la Croze. They find that the Armenian letters have a great resemblance in their formation to those of the Greek tongue. Jour. des scav. Juillet 1738, p. 390.

Those unknown characters which have been found in the ruins of Persepolis, must perhaps be considered as a particular kind of writing. But possibly the reason that they have not yet been read, is, because they have not been exactly copied. The example of the inscriptions at Palmyra should teach us to suspend our judgment. The vain efforts which had been made for near a whole century to read and explain the inscriptions at Palmyra, had at last made the learned conclude, that the Palmyrean characters were a particular kind of writing. At last, however, M. Barthélemy has explained these inscriptions in a most satisfactory manner. By the help of exact copies, he discovered that the Palmyrean alphabet partook of the Hebrew and Syriac. The reader may consult his dissertation, where he will find the greatest elegance and erudition adorned with the most uncommon modesty.

‡ See above, p. 177. & 178.

shapeⁱ; and they ranged them in the same manner, that is, from right to left^k.

It will perhaps be alledged, that it is very difficult to believe, that all alphabetic characters have been derived from the same origin, when we perceive such a prodigious variety and difference in the writing of the several nations of the world. Is not the great diversity in the manner of ranging the letters, alone sufficient to destroy this opinion? Some nations have ranged their letters perpendicularly, from the top to the bottom of the page, and continue to do so still. Others range theirs horizontally, but in different directions. The greatest number have followed the most natural movement from left to right, in which the action of the arm is most free and disengaged from the body. All the nations of Europe, and some others, dispose their letters in this manner^l.

A small number of nations have preferred the movement from right to left in writing. This was practised by the Assyrians, Egyptians, Phœnicians, Syrians, Arabians, Hebrews, and Chaldeans, but hardly by any other. This manner of ranging the letters is very embarrassing. The hand and instrument they write with, conceal a part of the letters they have just formed from the eye^m.

Do not these various ways of writing, it may be said, appear essentially different; and is not this a proof that several nations have owed the invention of writing to themselves, and each formed a particular method of their own? It is easy to answer this objection. To remove it effectually, I shall only mention one certain and well-attested fact, which, I think, clearly proves that all the alphabets now known might be derived from one and the same origin.

Can any two sets of letters appear to the eye more different from one another than the Samaritan and French? Yet it is very certain, and may be easily proved, that the letters of

ⁱ Rec. d'antiq. par M. le C. de Caylus, t. 1. p. 74. See also Plut. t. 2. p. 577. & seq.

^k Herod. l. 2. n. 36.; Bibliot. Chois. t. 11. p. 37.

^l Acad. des inscript. t. 6. p. 607.

^m Ibid. t. 6. p. 618.; Reland, dissert. miscellan.

our alphabet were derived from the Samaritan. We received our letters from the Romans, they from the Greeks^a, these from the Phœnicians^b; and the learned are now agreed that the Phœnician and Samaritan characters were the same^c.

But besides this evidence from history, a little reflection on the names and order of the letters, in the several alphabets I have just mentioned, will be sufficient to convince us of the truth of this genealogy. How could it have happened, that the Phœnician, Samaritan, Greek, Latin, and French letters, should all have the same names, and be ranged in the same order, if they had not been derived from the same origin?

The little resemblance, therefore, that appears at present between the alphabets of the different nations of the world, is no sufficient reason to make us deny, that they all proceeded from one common source. The succession of ages has introduced prodigious changes in their manner of writing in each nation. The history of writing among the Greeks, Romans, and modern nations of Europe, furnish more than sufficient evidence of this. There is a nation in which the way of writing has varied so much, that their ancient alphabet has hardly any resemblance to their present, either in the shape or arrangement of the letters^d, though it is certain they were derived from the same origin.

We can speak but very imperfectly of the number of letters of which the first alphabets were composed. Ancient writers have not explained themselves on this subject. Plutarch says that there were twenty-five letters in the Egyptian alphabet^e. But I cannot believe that all these letters were invented at the very first. We know that originally the Phœnicians had but sixteen letters: their alphabet consisted of no more than this number when Cadmus introduced it into Greece^f. I am persuaded the Egyptians, in like manner, invented but a small

^a Tacit. annal. l. 11. n. 14.

^b See part 2. b. 2. sect. 2. chap. 6.

^c See les mem. de Trev. Juill. 1704, p. 183.

^d See part 2. b. 2. sect. 2. chap. 6.

^e Tom. 2. p. 374. A. ^f Plin. l. 7. sect. 57. p. 412.

number of letters at first, and by degrees added others, to express the several articulations of the voice in a more distinct and commodious manner.

Besides, we are not to imagine that the discovery of alphabetic writing was very much diffused into the different parts of the world, in the ages we are now examining. On the contrary, it is proved to a demonstration, that very few nations had any knowledge of it in that period: All the world, excepting Egypt, and some parts of Asia, were for many ages entirely ignorant of this necessary and useful art. I shall take care to point out, in the second part of this work, when the knowledge of alphabetic writing was introduced into Europe. Let us speak at present of the various materials which have been used in different ages in the art of writing, taking that term for all kinds of writing originally known, such as designing at full or abridged; hieroglyphics, &c.

We know that rocks and stones were the first materials used for writing by the Egyptians¹, the ancient inhabitants of the north², and no doubt by many other nations. From hence came the practice almost universal among the nations of antiquity, of writing upon pillars, whatever they thought worthy of transmitting to posterity³. The pillars set up by Osiris, Bacchus, Sesostris, and Hercules, in the course of their expeditions, to perpetuate the memory of them, were very famous in antiquity⁴; those of Mercury Trismegistus were still more celebrated. On them, as is said, he had ingraved his whole doctrine and precepts in hieroglyphic characters⁵. In Crete there were very ancient pillars, on which was inscribed a description of all the ceremonies practised by the Corybantes⁶.

¹ Lucan. *Pharsal.* l. 3. v. 222. &c.

² Olaus Wormius de Dan. litterat. c. 25; Vossius de art. gramm. l. 1. c. 25. p. 125.; Herman. Hugo de prima scrib. orig. c. 8. p. 61. &c. c. 10. p. 76. Some remains of these ancient inscriptions are still to be seen in Denmark. Mem. de Trev. June 1703, p. 949. &c. Decem. 1719, p. 124.

³ Diod. l. 3. p. 211.; Strabo, l. 3. p. 259.

⁴ Diod. l. 1. p. 23. & 65. l. 3. p. 243. l. 4. p. 264.; Apollod. l. 2. p. 100. l. 3. p. 142.; Dionys. Perieget. v. 623.

⁵ Manetho apud Syncell. p. 40.; Jamblic. de myster. Egypt. sect. 13. c. 2.

in their sacrifices ^a. In Demosthenes's time there still existed a law of Theseus, wrote upon a pillar of stone ^b. The fable of the pillars of the earth, which Atlas committed to Hercules, ought to be understood, in my opinion, of certain pillars with learned inscriptions upon them, which Atlas explained to the son of Jupiter ^c.

Though the nations of the north had little or no connection with those of Asia and Africa, yet their history speaks of this practice in the primitive times, of inscribing upon pillars whatever they desired should be remembered. It is pretended there were some of them more than forty feet high, covered with inscriptions, coarse indeed, agreeable to the rudeness of their manners ^d. We may assert positively, that the first nations had no other monuments for recording their laws ^e, their public acts, and treaties ^f, the history of great events ^g, or important discoveries ^h. The greatest part of ancient authors composed their works from such kind of books ⁱ.

The practice of writing on bricks and flat stones, was also very ancient. It was upon bricks the Babylonians wrote their first astronomical observations ^k. The most ancient monuments of the Chinese literature were inscribed upon large tables of very hard stone ^l. Who knows not that the decalogue was

^a Porphy. de abst. l. 2. p. 156. 157.

^b In Næeram, p. 873. C.

^c Clem. Alex. Strom. l. 1. p. 360.; Pottet. ibid. note 12.

^d Olaus Magn. hist. gent. Septent. l. 1. c. 36.

^e Deut. c. 27. v. 8.; Plato, in Crit. p. 1107. C.; Dionys. Halicarn. l. 4. p. 240.; Athen. l. 11. p. 467. E.

^f Strabo, l. 3. p. 259. l. 10. p. 688.; Plut. t. 2. p. 292. B.; Paus. l. 5. c. 12. & 23. l. 8. c. 25.

^g Herod. l. 2. n. 102. & 106. l. 4. n. 87.; Diod. l. 1. p. 65. & 67. l. 5. p. 368.; Strabo, l. 10. p. 687.; Tacit. annal. l. 2. n. 65.

^h Proclus in Tim. l. 1. p. 31. F.; Achill. Tat. apud Petav. uranolog. p. 121.; Galen. advers. Julian. c. 1. t. 9. p. 376.; Apollon. Argon. l. 4. v. 279. &c.

ⁱ Clem. Alex. Strom. l. 1. p. 356. 357.; Plin. l. 36. sect. 14. p. 736.; Syncell. p. 40.; Jamblic. de myster. Egypt. sect. 1. c. 2.

It was undoubtedly from this ancient practice, the historian Josephus imagined these two pillars, which he says were set up by the children of Seth before the deluge. I shall speak more particularly of them in the article of astronomy.

^k Plin. l. 7. p. 413.

^l Lettr. édif. t. 19. p. 479.

wrote upon tables of stone ^m? Joshua too wrote a copy of the law upon the like materials ⁿ.

These methods were too toilsome and tedious; it was natural to study more commodious and easy ways of writing. To the bricks and stones which they used at first, they substituted the softer kinds of metals which were most easily engraved. It appears, that, in the days of Job, they most commonly wrote upon sheets of lead, with styles of iron ^o. Plates of copper ^p and tablets of wood ^q, were used in ancient times for this purpose. We have reason to believe, that the archives of cities and empires were for many ages preserved in this manner ^r. The most ancient nations had several motives to make use of such materials. For a long time they knew of none more proper or convenient; and as there were but very few in these remote ages who practised the art of writing, it was necessary to use the most solid and durable materials for the preservation of their public acts and monuments.

In the sequel several other materials were used for writing on, as the leaves of certain plants, the inner bark of certain trees, the skins of animals, stuffs, tablets of wood covered with wax, &c ^s. These are still used in some countries of Asia and Africa. Job speaks of writing a book ^t. I cannot imagine what could be the form or materials of books in that age. From hence, however, we learn that even then they

^m Exod. c. 24. v. 12. c. 34. v. 1. & 4.

ⁿ Jos. c. 8. v. 32.

^o Chap. 19. v. 23. 24. See also Plin. l. 13. sect. 21. p. 689.; Paus. l. 9. c. 31.

^p Plato in Min. p. 568. F.; Sophocl. in Trachin. v. 695. 696.; Ovid. met. l. 1. v. 91. 92.; Plin. l. 34. sect. 21. p. 659.; Tacit. annal. l. 4. n. 43. Plut. t. 2. p. 577.; Hist. gen. des voyag. t. 6. p. 253.

^q Is. c. 30. v. 8.; Horat. art. poet. v. 399.; A. Gell. noct. Attic. l. 2. c. 12. See le P. Calmet, t. 1. p. 32.

^r See Polyb. l. 3. p. 181. edit. Paris.; T. Livius, l. 3. n. 57.; Plin. l. 13. sect. 21. p. 689. l. 34. sect. 21. p. 659.; Tacit. annal. l. 4. n. 43.; Suidas, in Ἀκασίλαος; t. 1. p. 89.; Paus. l. 4. c. 26.; Lettr. édif. t. 14. p. 332. 333.; Bibliot. anc. & mod. t. 15. p. 363. 364.

^s See Plin. l. 13. sect. 21.; Isidor. orig. l. 6. c. 12.; Suid. voce Ἐκφυλλογραφῆσαι, t. 1. p. 707.; Calmet, t. 3. p. 48.

^t Chap. 31. v. 35.

wrote upon substances which were capable of being folded or rolled up; for the expressions used by Job denote this ^u. These might perhaps be very thin plates of metal, skins, the leaves or inner bark of trees, or plants, &c. I have said something already of plates of metal. The practice of writing on the skins of animals, was both very ancient and very general ^x. That of stamping characters upon the leaves, or interior bark of trees, with a blunt punchion of iron, was a practice no less ancient and universal ^y. We may chuse which of these we think most probable; only remembering that in the passage where Job mentions writing, he speaks of no other instrument but the style made of iron. We may conclude from thence, that in his time they knew of no other instrument for drawing characters. In general, it is evident that in these ages they might be said rather to have ingraved than written.

The art of drawing letters on some kinds of substances, with certain coloured liquors, was afterwards found out. At first they laid them on with pencils, a practice still retained by the Chinese and several others. To pencils, reeds properly cut, succeeded; these, with iron styles, which were absolutely necessary when they wrote on plates of metal or tablets covered with wax, were the only instruments used in writing for many ages. The use of paper, pens, and ink, was quite unknown to the ancients. These facts shew sufficiently that all the ancient ways of writing were tedious, toilsome, and difficult; that great patience and application were necessary to the practice of them. These were no doubt great obstacles to the progress of writing. We may add, that mankind in the first ages not being very numerous, and the greatest part of them being constantly employed in providing for the most pressing necessities of life, few had leisure or inclination to apply to an art which required so much labour, time, and

^u Chap. 31. v. 36.

^x See Herod. l. 5. n. 58.; Suid. voce *Ἀρχαιοτέρα*, t. 1. p. 341.; Rep. des Lettr. t. 22. p. 253.

^y See Virgil. *Aeneid.* l. 3. v. 444.; Hist. gen. des voyag. t. 6. p. 253. t. 8. p. 147. & 532.; Essai sur les hieroglyph. des Egypt. t. 2. p. 455.; Voyag. de Pyrard, p. 103. & 293.; Rec. des voyages qui ont servi à l'établissement de la compagnie des Ind. Holland. t. 1. p. 270. & 361.

study. For this reason, though writing was known in the ages we are now examining, it was but little practised. We do not find it was at all used in the common affairs of social life. When Joseph discovered himself to his brethren, and sent them back to their father, he did not charge them with any letters. He gave them his orders by word of mouth, and enjoined them to deliver what he said in the same manner². Jacob, to distinguish the place where Rachel was buried, set up a pillar. It is not said that he put any inscription upon it³. Neither did they make use of writing in the most important transactions of society. Sales, promises, obligations, were all verbal in the presence of a certain number of persons. All disputes were tried and determined by the verbal testimonies of witnesses⁴.

We need not be surprised that writing was originally so little used. The practice of that art was so tedious, and so difficult that it could not be common. This was one great reason of the very slow progress of the arts and sciences. Human knowledge can only be enlarged and improved, in proportion to the means which ingenious men have of communicating their discoveries to posterity with clearness, certainty, and ease. The methods which mankind first employed for communicating their thoughts, had none of these properties.

Arts and sciences were not the only sufferers from these defects in the art of writing; they had also a fatal influence on manners. Man needs instruction to form and regulate his manners; and if the light of the understanding does not entirely extirpate the perverse inclinations of the heart, it contributes greatly to soften and correct them. But how was it possible to instruct and enlighten mankind without the use of writing? I need not fear then to affirm boldly, that no discovery has contributed so much to draw men out of their primitive barbarity, as the art of writing with facility. The propagation of this art has been the great means of enlightening the minds, forming the hearts, and softening the manners of

² Gen. c. 45. v. 9.

³ Ibid. c. 35. v. 20.

⁴ See above, b. I. chap. I. art. I. p. 27. & 28.

mankind;

mankind; the great instrument of civilizing the world and strengthening the ties of social life. If there are still some nations of savages to be seen in both continents, who by their ignorance, fierceness, and barbarity, are a disgrace to human nature, it is owing to their ignorance of the art of writing, and of the various branches of knowledge which depend upon it. Let this art be introduced amongst these ferocious people, let them once apply themselves to the cultivation of letters, they will instantly be humanized*. What an unbounded field for reflection is it, to consider the prodigious changes which the art of writing with facility, has introduced amongst those people who have applied themselves to it! We should never have done if we attempted to enumerate the infinite advantages which society has derived from this discovery.

* It is hardly possible to imagine what strange ideas the savages have of epistles, and of writing in general. We may judge of this from a very curious story related by Vossius in his treatise *de quatuor art. popul. c. 2. p. 7.*

B O O K III.

Of Sciences.

TH E arts and sciences are so nearly related and intimately connected, that they ought not to be separated. Their origin has been the same. The branches of knowledge, which are now dignified with the name of *Sciences*, were at first only rude unpolished arts, practised without theory, principles, or method. But by much study and reflection, in a long succession of ages, they have been reduced to rules, and raised to that perfection which distinguishes the sciences from the arts; which consist rather in the labour of the hands, than the exercise of the mind.

The way of life which mankind led in the first ages after the confusion of tongues, and dispersion of families, would not permit them to acquire very extensive knowledge, or even to cultivate what had survived the deluge. Wholly busied in providing for the most pressing necessities of life, they could not possibly employ their thoughts in matters of study and speculation. But after the reunion of families, and establishment of societies, some enjoyed such a degree of ease and leisure, as enabled them to apply their minds to researches and inquiries of an abstracted nature. Men of a happy and inventive genius, who are raised up by providence, for the good of mankind in every age, then appeared. These, being sensible of the great inconvenience of working without rule or guide, endeavoured to form systems, and lay down regular plans for the direction of their various operations. It was necessity, that parent of sciences, as well as arts, which set their thoughts to work. Ancient traditions ascribe the invention of both to the same persons, viz. to the gods. A proof that mankind have
in

In all ages acknowledged themselves indebted to the goodness of the supreme Being, for the first discoveries.

It is impossible to follow mankind step by step in their advances towards the knowledge of the most sublime and most abstracted sciences. It would be vain to attempt this. Ancient writers have not furnished us with sufficient lights on this subject. They have contented themselves with telling us the names of those who were regarded by antiquity as the inventors of the several sciences. But they have not told us by what means they arrived at these inventions, and by what steps they brought them to perfection. We must have recourse to conjecture for want of information.

The most useful and most necessary sciences would be cultivated first. We cannot therefore doubt the great antiquity of medicine, arithmetic, astronomy, and geometry. The love of life, the necessity of keeping the transactions of society in order, the importance of dividing lands, which introduced the distinction of property, and regulating the operations of tillage, and the impossibility of executing any considerable enterprise, without some knowledge of the relations and proportions of things, must have occasioned the early birth of the sciences we have mentioned.

C H A P. I.

*Of Medicine in general **

ONE of the first cares of mankind, was certainly that of their own preservation. Finding themselves from

* It is scarce necessary to observe, that the ancients did not affix the same idea to the word *medicine* that we do. Under that name they comprehended every thing that related to the art of healing. We should consequently have comprehended in one article all the branches of that art. Yet, for the greater clearness, I have resolved to treat of them separately. Under the article of *medicine*, I propose only to give some general hints how the first remedies were discovered.

their very birth exposed to various accidents and diseases, they would soon begin to look about for remedies. But how they came to discover the different specifics for their different diseases, and the most proper methods of applying these specifics, is what we cannot tell. We have nothing left us about the invention of medicine, but a heap of fables. Every nation ascribes this invention to themselves, and names those they consider as the authors of it. It would be quite useless to enter into any disquisition about these names.

It is very certain, that the different practices used in different countries were not invented by one and the same person. Every man naturally attends to what may contribute to his preservation. As mankind therefore were dispersed into different climates, they sought for such remedies as were best suited to the diseases incident to the climates which they inhabited. Accordingly we find that each nation had its own peculiar method, of its own invention, for the curing of diseases. It was only through length of time, and by means of commerce, that some medical operations and receipts have been communicated from one country to another.

We can only make some very general reflections on the rise of medicine. This science derived its origin from experience and observation. Some remedies which nature furnishes, were at first discovered by chance. The first generations of mankind subsisted chiefly on plants, roots, and fruits, of whose qualities they had no previous knowledge^a. They would find that some of these produced very remarkable effects. The observation of this would lead them to make distinct experiments on the virtues of each of them. These repeated experiments would discover their different qualities. Such observations and experiments guided the minds of men in their inquiries, and on these they founded the principles of medicine*. Many ages, it is true, must have elapsed, before

^a See above, b. 2. p. 76. & 85.

* It is certain the *dietetic* was that part of medicine which was first in use. Men had daily occasion to observe what meats and drinks were healthful or hurtful. Without such observations they must have fallen into diseases which must have proved destructive.

they had discovered with certainty the properties and preparations of remedies proper for each disease. Medicine in the first ages of the world was not properly a science. The practice of several nations furnishes us with proofs of this. In Siam their medicine consists of a certain number of receipts which have been handed down from their ancestors. They apply these at random, without any regard to the particular symptoms of diseases ^b. The Peruvians ^c had several medical receipts and operations which they had learned from experience, but they had formed no theory of that science. The art of healing owes its improvement to the attentive study of natural history ^{*}.

When we inquire in what manner medicine was practised in remote antiquity, we must make a distinction between medicine, considered as an art, and that which may be called natural. This last was practised many ages before there were any physicians by profession. At first all persons prescribed without distinction [†]. Whoever had made any experiments upon himself or others, communicated them to his friends and neighbours, when they seemed to have the like disorders. Reflections upon these experiments, formed, by degrees, a kind of system of natural medicine. Fathers took care to teach their children what knowledge they had of this kind. This we learn from ancient traditions. Isis, it is said, instructed his son Orus in medicine [‡].

We are informed, that, in some countries, care was taken that every individual might enjoy the benefit of the discoveries which others had made. It was the custom of the Babylonians, Egyptians, and some other nations, to expose their sick

^b Hist. gen. des voyag. t. 9. p. 264.

^c Hist. des Incas, t. 2. p. 35. & 47

^{*} *Ita ut morborum curatio, et rerum natura contemplatio, sub iisdem auctoribus nata sit*, says Celsus, l. 1. in præfat.

[†] Pliny justly observes, that though there are some nations who have no physicians, yet they are not altogether strangers to physic. l. 29. sect. 5. p. 495. See also les mœurs des sauvages, t. 2. p. 364.

[‡] Diod. l. 1. p. 30.

Garcilasso says, that the Peruvians cured one another by remedies which they had learned from father to son. Hist. des Incas, t. 2. p. 48. 49.

to public view. The design of this was, that such as passed by, if they had been attacked and cured of the like indispositions, might assist them with their advice. No person was even permitted to pass by without informing himself of their diseases *. This custom bears the marks of the highest antiquity, and shews us in what manner medicine was practised in the most early times. For such a custom could only prevail before this art had been reduced into any system.

This is all we can say of the state of this science in the ages now under our consideration. We must, as I have said already, content ourselves with some general reflections. For we cannot know the particular remedies which were used by different nations, till after the time that medicine had been reduced into an art and system. The Assyrians, Egyptians, and Phœnicians, are believed to have been the first who made a particular study of physic. But we are ignorant of the time when this science was reduced by these nations into an art, and into a particular profession.

There is no mention of physicians, properly so called, before the age of Moses. For which reason we must refer to the following books what we have to say of the method in which physic was practised by the Egyptians. This is the only nation in remote antiquity whose method of practice we are a little acquainted with. We may add further, that medicine in the sense we now understand it, for the cure of internal maladies, seems to have been quite unknown in the first ages of the world.

In fact, we find no mention in the first ages, either of physicians or medicines for those diseases which proceeded from the disorder of the humours. There is not one word of this in the patriarchal history, although it mentions the sickness of Isaac, Abimelech, Rachel, and some others. It is very remarkable, that when Jacob was sick, it is not said that Joseph sent him physicians *.

The

* Herod. l. 1. n. 197.; Strabo, l. 3. p. 234. l. 16. p. 1082.

* It is true, we find the word *physicians* in this passage, on occasion of the death of Jacob. Moses says, that Jacob being dead, Joseph commanded the physicians to embalm the body of his father. Gen. c. 50. v. 2.

The book of Job may serve to confirm what we have now said. That book is evidently of the greatest antiquity^r. When Job was smote with a terrible disease, we do not hear that he had recourse to physicians. His disorder was considered as an immediate stroke of heaven. His friends reasoned according to this prejudice, and set themselves to prove that it was the punishment of his crimes.

The little knowledge mankind had of medicine in these ages, and the prevailing persuasion, that diseases were the effects of the divine displeasure, was the reason that they chiefly applied to the Deity and his ministers for their cure. They expected no assistance from human art. This way of thinking is attested by one of the most famous physicians of antiquity. Celsus says that they imagined all internal diseases came immediately from the gods, and they applied to them only for their cure^s.

ARTICLE I.

Surgery.

Medicine, surgery, and pharmacy, were not originally distinct professions, but united in the same person. It was not necessary to subdivide the art of healing into several branches, till knowledge and discoveries were almost become infinite. Surgery was probably the first reduced into an art*.
The

But this has no relation to the practice of medicine. These physicians were only employed in embalming the body of Jacob, but were not called in to assist him in his sickness. Their function on this occasion had no connection with the real object of medicine, which is the cure of diseases. We must take notice, that all persons whose professions engaged them in the care of the human body, were anciently called physicians. The Septuagint renders the Hebrew word by *Ἐνταφιασται*, *Pollinctores*, *Vespillones*, Embalmers.

^r See our dissertation upon the antiquity of the book of Job, at the end of the last volume.

^s Lib. I. in præfat. This way of thinking still prevails in several nations. de Francois Voyage Pyrrard, c. 9. p. 62. 63. 131. 132. & 282.

* Celsus makes surgery the most ancient branch of medicine. He says, that

The other branches of medicine might in some sort be dispensed with, but the study of surgery has been absolutely necessary in all ages.

To say nothing of other accidents which require the assistance of surgery, men were very early engaged in quarrels. As soon as battles were fought, it became necessary to study the art of healing wounds. They could not, as in the case of internal maladies, expect a cure from the mere efforts of nature. Every individual could not, from his own experience, be furnished with sufficient skill to heal a wound, to reduce a dislocation, or set a broken bone. These things require such a degree of experience and dexterity, as can only be acquired by long practice. It was necessary therefore that some persons should devote themselves to that study. It is even probable, that the first physicians owed the honours of that name to their skill in surgery. As they treated disorders which could not be cured without their help, men were willing to distinguish and respect them more than those who were concerned in the other part of medicine ^h.

We have no accounts remaining of their manner of treating wounds, in the first ages of the world. It was probably very simple. Bandages must have been the first means used for stopping blood, and defending the wounded part from the injuries of the air *. In process of time, the juice of roots, or simples, either pounded, or steeped in wine or water, would be added. The wood and bark of certain trees, oil, and rosin, were also used ⁱ. These were the only remedies originally known. The composition and use of ointments

that medicine originally consisted in the practice of surgery, and dressing of wounds, &c. *Morbos vero* (adds he) *ad iram deorum immortalium relatos, & ab iisdem opem posci solitum.* l. 1. in præfat. & l. 7. in præfat.

Another proof, that men first applied to the study of surgery, is, that the savages understand several branches of that art very well. *Mœurs des sauvages*, t. 2. p. 365. & 368.

^h Servius, ad *Æneid.* l. 12. v. 396. See also le Clerc, *hist. de la med.* part 1. c. 15.

* This is practised by the savages. See *l'hist. nat. de l'Islande*, t. 2. p. 174. & *l'hist. gen. des voyag.* t. 4. p. 139.

ⁱ *Iliad.* l. 11. v. 845.

and

and plaisters, was posterior to the ages we are now examining *.

With respect to operations, we may well believe, that they were then very imperfect, such as might be expected from men almost totally ignorant of the arts and sciences. These first operators, destitute of the light of a wise and rational theory, unacquainted with any settled rules or principles, had no other guide but a simple practice †.

Besides, the instruments used by the first operators in surgery must have been very defective. They could not be of iron; for it was long, as we have already shown, before that metal was discovered. It must even have been a considerable time before men understood the art of working the other metals, with so much delicacy, as to use them in chirurgical operations. They supplied this want by other inventions. It seems probable, that sharp flints, the pointed bones of beasts and fishes, were the first instruments used in surgery. The Egyptian embalmers used an Ethiopian stone, exceeding sharp, for opening dead bodies, and taking out the entrails ^k. Circumcision also was performed with such stones ^l. The savages present us, at this day, with practices similar to these ^m.

Surgery would necessarily improve from time to time; the whole world would contribute to the advancement of such a useful art. It must have been a long time, however, before the introduction of those capital operations, which require great dexterity, and a thorough knowledge of the structure of the human body.

It is not certainly known, whether bleeding, at present the most common operation in surgery, was practised by the most

* We find no mention of these in the books of Moses. It is certain Homer never names them; a proof that they were not known in his time.

† We may compare the first surgeons, to a set of men known in the country, by the name of *Bone-setters*.

^k Herod. l. 2. n. 86.; Diod. l. 1. p. 102.

^l Exod. c. 4. v. 25.

^m See Mœurs des sauvag. t. 2. p. 370.; Voyag. de la baye d'Hudson, t. 1. p. 108.; Hist. des Incas, t. 2. p. 47.

ancient nations. It does not appear to have been used amongst the Egyptians. Their principal remedies, as I shall shew in the second part, were diet, glisters, and vomits. Bleeding is an operation of so great importance, that if it had been used by that people, it would have been mentioned by Herodotus, or Diodorus, who give so distinct and full an account of the practices of the Egyptians.

Besides, it is not probable that men would soon think of, or readily submit to such a remedy. Nature does not give the same indications for bleeding as for purging. Purgatives were discovered by chance, being taken into the bodies of the first men by way of common food. They occasion a discharge of the humours too in an ordinary way, which is not the case with bleeding. Much more knowledge and reasoning therefore were necessary to bring men to a resolution of opening a vein, than of giving purgatives^a.

I shall finish what I have to say of surgery at present, with a few reflections on midwifery. We may be sure that this operation was one of the first which engaged the attention of mankind.

It is more than probable, that women in the first ages were delivered by themselves. Like the savages, and the greatest part of animals*, they did not wait for foreign aid to facilitate that dolorous operation. But as every delivery is not equally easy and happy, some women would soon be found in such distressful circumstances, as required the help of others to save them and the fruit of their wombs from perishing, by a labour too long and painful. It is highly probable, that women were the first who lent assistance to their own sex in these critical moments. Mothers performed this office to their daughters. Their own experience taught them to as-

^a Hist. de la medec. l. I. c. 18. p. 52. 53.

* I say the greatest part of animals, because, from late discoveries, it appears, that the male, in some kinds of animals, assists the female in bringing forth her young; as particularly the toad. Acad. des sciences, ann. 1741. hist. p. 28. & seq.

Gassendi speaks of the like observation, made by Peyresc, upon cats. These are his words, *Annotavit feles obstetricatione interdum uti*. Vita Peyresci, p. 212. edit. Batav. in 4^{to}.

ford help to others, and remove the obstacles to a speedy delivery.

The reflections which were afterwards made on the many fatal accidents to which women in labour are exposed, convinced the world of the necessity of making midwifery a study, and reducing a practice so important in its consequences, into an art. We need not therefore be surpris'd to find that midwifery was a particular profession in the days of Jacob. By the manner in which Moses expresses himself on this subject, it is easy to observe, that there were then, in the nations of Asia*, midwives by profession, as there are amongst us at present. The fact proves too that women were preferred to men in the practice of this art. A just and natural preference, as they had only experience at that time for their guide.

It appears also, that in Egypt, from time immemorial, the care of delivering women was committed to women†. We might even imagine from the words which Moses uses, that the Egyptian midwives used some sort of machine for facilitating delivery; this was, as far as we can guess, a kind of chair, on which they placed the mother in the time of labour‡.

* Gen. c. 35. v. 17. c. 38. v. 27.

† Exod. c. 1. v. 15. & seq.

There is some difficulty in the text. The generality of interpreters, however, are of opinion, that the midwives Pharaoh commanded to slay the male children of the Israelites, were Egyptians. Josephus says so expressly. Antiq. l. 2. c. 5. Besides, v. 19. of the same chapter leaves no room to doubt but there were midwives by profession in Egypt.

‡ Exod. c. 1. v. 16, according to the Hebrew. The word אֲבֵנִים *Abenaim*, in Latin *Sellas*, is susceptible of several interpretations. See Vatablus *ad locum cit.*

What confirms the interpretation we have given of this word, is, that there is frequent mention of such seats for facilitating delivery in physical writers. See Suid. voce Λοχαίοι διφφοί, t. 2. p. 461.

ARTICLE II.

Anatomy.

WE cannot conceive at present how any operations could be performed on the human body, without an exact knowledge of the arrangement of its parts. Anatomy is certainly the foundation both of medicine and surgery. Without some skill in anatomy, it is impossible to know either the cause or the seat of several diseases. It seems natural to suppose, therefore, that anatomy must have been at least as ancient as medicine or surgery. But history contradicts this supposition. Before we proceed any further, it may be proper to fix the idea we ought to form of anatomy. We may consider it in two different periods, in its commencement and in the high degree of perfection it has attained in our days.

Anatomy is, at present, that branch of medicine which requires the deepest study and penetration, the most various and most extensive knowledge, and the most delicate operations. Anatomy, considered in this point of view, was certainly unknown in the first ages. Reason, independent of historical proof, is sufficient to convince us of it.

Notwithstanding this, men might have some imperfect knowledge, even in the earliest ages, of the internal structure of their bodies. Their opening the bodies of animals designed for food would give them some light^r. Their viewing attentively the wounds, fractures, and other accidents to which the human body is exposed, would furnish them with further hints. But how long must it have been, before they knew how to turn their observations into use, how to reason upon what they had seen? Many ages must have elapsed before anatomy reflected any light on medicine, or directed the operations of surgery*.

Anatomy,

^r See l'hist. gén. des voyag. t. 5. p. 170.

* We will find no difficulty in believing what is here advanced, when we consider

Anatomy, we have reason to think, owed its origin to surgery. The various and frequent occasions men had of practising the chirurgical art, would by little and little make them acquainted with the structure and mechanism of their bodies. This acquaintance, however, would for a long time amount to no more than an imperfect knowledge of the exterior parts of the human body. Some writers indeed have been inclined to think, that these first ages had almost as extensive and exact a knowledge of anatomy as we have at present. But if these authors had duly reflected on the infinite number of rational experiments, and delicate operations, which must have concurred to bring anatomy to its present state of perfection, they could not have entertained an opinion so contrary both to history and probability. It may not be improper to mention our reasons for rejecting this absurd opinion.

Such is the favourable idea which all ages have entertained of the ancient Egyptians, that the invention of almost all sciences has been ascribed to them. Amongst others, surgery and anatomy have not been forgot; and Apis, one of their kings, passed for their inventor^r. Athotis, one of the first sovereigns of Egypt, they pretend, had writ several books on anatomy, in which he treated of the manner of dissecting bodies^t. They say further, that amongst the prodigious number of books ascribed to Hermes, there were six on medicine, the first of which related to anatomy^u. But no physician of antiquity has quoted these pretended writings, and it is well enough known what we ought to think of the books ascribed to Hermes,

The embalming the bodies, not only of men, but of other animals, which had been practised by the Egyptians^x in all

consider that the study of anatomy was quite abandoned for many ages, and not resumed till the sixteenth century.

^r Agrippa, de vanit. scient. c. 85. ; Clem. Alex. Strom. l. 1. p. 362. & Theodoret. (serm. de curand. Græc. affect. p. 467.) ascribe the invention of medicine to Apis.

Suidas says the same, voce "Απης.

^t African. & Euseb. apud Syncell. p. 54. & 55.

^u Cl. Alex. Strom. l. 6. p. 758.

^x This is the opinion of Galen. *Introductio, seu Medicus*. It is disputed, however, whether that work be really his.

ages,

ages; has made it to be imagined, that they must have had an exact knowledge of the internal parts of the human body. This opinion, however specious in appearance, is without foundation. It might be easily proved, that this practice of embalming the dead, could not give the Egyptians so much light and instruction as has been imagined. An examination of what the ancients have told us concerning the manner of performing this operation, will be sufficient to convince us that anatomy could derive no improvement from it.

They did not open the head of the dead body, but extracted the brain by the nostrils, with instruments made for that purpose. After they had extracted the brain, they poured perfumes and aromatic compositions into its place. The body was opened with much ceremony. There was an officer appointed to preside, and mark the place on the left side of the dead where the incision was to be made. The Egyptians used only a sharp stone for performing this operation ^y. The person who performed it fled as soon as he had done his office; and all who were present pursued him with stones, as one who had incurred the public malediction. For the Egyptians regarded with horror, every one who had offered any violence to a human body ^z.

From this way of thinking, it is easy to conclude, that these people did not open the bodies of the dead, with any view to learn the secrets of anatomy. It does not even appear that the opening which they made on these occasions was very considerable, since it is said, that he who extracted the intrails, did it by introducing his hand at the incision ^a. They took out all the intestines and viscera, except the heart and the kidneys ^b. They did not replace the intrails again

^y Herod. l. i. n. 86.; Diod. l. i. p. 102.

^z Diod. *ibid.* ^a Diod. *ibid.*

^b *Ibid.* What Diodorus says here merits some reflection. As to the kidneys, it was easy to embalm them without extraction. But the heart is under cover. It would have been necessary to have pierced or torn the diaphragm to have reached it, since we know the incision was in the lower belly. There is some difficulty in conceiving how they introduced their embalming materials into the thorax.

in the body, but, from a religious motive ^c, cast them into the Nile ^d.

We must observe further, that none but the rich were embalmed, as we have been describing. The manner of performing this operation upon the bulk of the people, was far more simple; and must have contributed still less to the improvement of anatomy. They neither made any incision in the body, nor extracted the intrails. The embalmers filled a syringe with certain aromatic liquors, which they injected into the body by the anus. This composition had such virtue and power as to consume the intestines ^e.

It is in vain to pretend to prove the antiquity of anatomy, from this practice of embalming among the Egyptians. We see plainly, that this practice would give them no light into the internal mechanism of the human body. Embalming was considered by that people rather as a ceremony of religion, than as a lesson of anatomy ^f. We might, with much better reason, infer from this practice, that the Egyptians had made considerable progress in the knowledge of simples, as we shall see by and by.

Pliny tells us, it is true, that the kings of Egypt commanded dead bodies to be dissected for the improvement of anatomy ^g. But what Pliny says, does not relate to the ancient kings of that country, but to the Ptolomys who reigned there after the death of Alexander. These monarchs established a medical school at Alexandria, which became exceeding famous. It is to this period the anatomical discoveries of the Egyptians must be referred ^{*}.

ARTICLE

^c Plut. t. 2. p. 159. B.; Porphyr. de abstinent. l. 4. p. 380; Sext. Empiric. l. 3. c. 24. p. 184.

^d Plut. & Porphyr. *locis cit.*

^e Herod. l. 2. n. 87.

^f See below, article of botany, & part 3. b. 2. chap. 2. p. 68.

The Egyptians seem to have had the same scruples about dissecting human bodies as the Chinese, who would never do it upon any, not even upon the bodies of criminals. See Lettr. édif. t. 17. p. 389. & 390. t. 21. p. 147. &c. t. 26. p. 26.

^g L. 19. sect. 26. p. 168.

^{*} I take this opportunity of correcting the mistakes of some authors, about that figure of a dead person which the Egyptians introduced at their feasts. Herod. l. 2. n. 78.

Some have imagined that this was a real skeleton, which supposes the Egyptian

ARTICLE III,

Botany.

Botany is a science which has been very much cultivated in all ages, and by all nations. Men began in good time to examine the virtues of simples. In the most remote antiquity, the art of curing diseases, and even of healing wounds, consisted only in the application of herbs, and the use of their juices ^h. So high a value did some nations set on the discovery of the virtues of simples, that they ascribed it to the gods ⁱ.

The Egyptians were formerly considered as the first who applied to the study of botany ^k. This was a consequence of that opinion which ascribed the invention of medicine to that people. It is even pretended, that they had composed treatises on botany in the earliest ages. Amongst that prodigious number of books ascribed to Mercury Trismegistus, some, it is said, treated of the virtues of plants ^l.

Without laying much stress on such suspected authorities, we have sufficient evidence from the sacred books, that, in

tians understood osteology. Plutarch gave occasion to this mistake, t. 2. p. 148. by using the word σκελετός, for what Herodotus calls νεκρὸς ξύλινος, *wooden figure of the dead*. Xylander, the translator of Plutarch, has confirmed the mistake of that author, by adding in his version of the word Σκελετόν, *id est, exsiccata hominis atque inter se compacta ossa*. This paraphrase of Xylander is not just. Galen was the first who rendered σκελετός, a *skeleton*, i. e. an assemblage of all the human bones stript of every covering. For σκελετόν σῶμα signifies properly *cadaver exsiccatum*.

^h Plin. l. 25. init. l. 26. sect. 6.; Hygin. fab. 274. p. 328.; Plut. t. 2. p. 646. 647.; Scholiast. Hom. ad Iliad. l. II. v. 845.; Servius, ad Æneid. l. 12. v. 396.; Isidor. orig. l. 4. c. 9. init.

ⁱ Plin. l. 25. p. 360. 361.

^k Plin. l. 25. sect. 5. p. 360. He supports this by the testimony of Homer, Odyss. l. 4. v. 223.

^l In this number they reckon a book, intitled, *Of the thirty-six herbs of use in horoscopes*. But Galen treats this as a mere fable, De simplic. medicam. facult. l. 6. proœm. t. 13. p. 145.

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the primitive times, men entertained a high opinion of the virtues of plants. Without doubt, they had discovered, in the days of Jacob, that certain plants were possessed of peculiar powers and virtues. The great earnestness of Rachel to obtain, from her sister, some of the mandrakes which Reuben had brought from the fields, could proceed from nothing but a strong persuasion of the great efficacy of that plant in curing barrenness. We do not now inquire whether this persuasion was well founded or not. It is sufficient for our present purpose, that they then believed this plant possessed that virtue ^m.

We find another proof in scripture, more positive, and as ancient, of the great progress botany had made in some countries. Moses tells us, that, in the time of Jacob, the Egyptians were accustomed to embalm the bodies of the dead. This fact is more than a sufficient proof that this people must have made great progress in the knowledge of the virtues and properties of simples.

The scripture says, that when Jacob died, Joseph caused him to be embalmed. The sacred historian, it is true, does not mention the particulars of this operation; but these may be supplied from profane authors. They tell us, that many aromatics, perfumes, and compositions of different kinds, were used in embalming; this, without mentioning several other preparations, necessarily supposes a considerable degree of knowledge and study ⁿ. Accordingly the scripture takes notice, that they spent forty days in embalming Jacob ^o. This

^m Gen. c. 30. v. 14. 15.

The word *Dudaim*, which Moses uses in this place, is one of those whose true signification is not now known. I use the word *Mandrake*, not because I am convinced that this is the true translation of the Hebrew text. But as we are now only proving that they had then some idea of the virtues of plants in general, it is not necessary to examine the particular kind of plant Moses designed. See Calmet's com. & Matth. Hillerus. This author pretends, part 1. c. 27. that *Dudaim* signifies *cherries*. I am rather inclined to think it signifies *truffles*. This plant was very well known to the ancients. See l'hist. de la medec. part 3. l. 2. c. 2.

ⁿ Herod. l. 2. n. 86. 87.; Diod. l. 1. p. 102.

The great quantity of aromatics, rosin and myrrh, which the Ishmaelitic merchants, to whom Joseph was sold, were carrying into Egypt, were probably designed for embalming. Gen. c. 37. v. 25.

^o Gen. c. 50. v. 3.

This proves that the Egyptians had then discovered that this space of time was necessary, to give the body those preparations proper for drying it, and preserving it from corruption *.

It appears further, that this secret was then known only in Egypt. The scriptures relating the death of Sarah, Abraham, Rachel, and Isaac, say simply, that they were buried, without one word of embalming. This is mentioned only on occasion of the death of Jacob and Joseph; because these two patriarchs ended their days in Egypt. It would seem then, that this science was peculiar to the Egyptians. It would not be difficult to point out the motives which made this people so soon apply themselves to find out the secret of preserving bodies from corruption. They were partly political, partly religious. I have spoke of their political motives in the article of government ^p. I shall now shew what influence religion had on this practice.

The Egyptians believed the immortality of the soul; but they disfigured this sublime truth, by the doctrine of the transmigration of souls. They were of opinion, that when the soul was separated from the body, it entered into some animal; from whence, after a long circuit of 3000 years, it returned again into a human body ^q. But the Egyptians imagined at the same time, that the soul remained attached to the human body, as long as that was preserved from corruption ^r. This persuasion put them upon studying, with great earnestness, the means of preserving bodies from corrupting, to prevent the transmigration of the souls of their friends into the bodies of different animals. They endeavoured to prolong the duration of the human frame, by removing the causes of its corruption [†]; and it must be owned, that they understood the art of

It appears that afterwards this operation took up longer time. Herodotus says it sometimes took 70 days. l. 2. n. 86. Diodorus says only it took up more than 30 days. l. 1. p. 102.

* We do not know certainly the composition used by the Egyptians in embalming bodies. See mem. de l'acad. des scien. ann. 1750, hist. p. 53.

^p *Supra*, b. 1. art. 4. p. 57. ^q Herod. l. 2. n. 123.

^r Servius ad *Aneid.* l. 3. v. 67.

[†] We shall have another opportunity of speaking of this opinion in part 3. art. Pyramid.

embalming

embalming better than any other nation. For the Egyptians had learned the art of preserving dead bodies from putrefaction, not only for a few years, but, if we may so speak, for ever. The mummies which are brought from Egypt, are an authentic proof of this.

We shall enlarge no further on botany at this time. We know not which were the plants mankind made use of first. Only we may be certain, that, in the first ages, each people made use of the simples which their own soil produced, and contented themselves with what Providence had bestowed on the climate they inhabited *. In process of time, commerce opened to mankind the different regions of the earth, and gave them the use of all the healing plants which it any where produced. But it was long before these foreign remedies were known. The commerce and intercourse of different nations with one another was very confined in the first ages of the world.

A R T I C L E IV.

Pharmacy.

THere are but few medicines used in physic, which do not require some preparation. Nature presents the substances, but art must make them ready for use. Pharmacy, therefore, is absolutely necessary for ascertaining the preparation, composition, and doses of medicines. By this art, the noxious qualities of medicines are corrected, their various virtues unfolded, and even new properties superadded.

Medicines are either simple or compound. Simple medicines are such as nature produces, without the help of art. Compound medicines are the work of art, and consist of a mixture of several simple medicines. They are of three dif-

* Botanists prove that God has made each soil produce such plants as are most necessary and agreeable to its inhabitants. See mem. de Trev. Janv. 1702, p. 160. ; Theolog. physiq. l. 10. p. 594. 595.

Solenander carries this matter further, and says, that from the plants which a country most commonly produces, you may guess what diseases reign most in that country. Ibid. not. 25.

ferent kinds, which have been ranged in three classes or families, viz. the animal, vegetable, and mineral. These are the subjects on which pharmacy operates; and it teaches how to prepare them, and extract from them whatever may be useful in medicine. Nothing but the experience of many ages could instruct mankind in the secrets of this useful and necessary art.

It is equally contrary to reason and history, to pretend that chymical preparations were used in medicine in the ages we are now considering. The first physicians were destitute of that various and extensive knowledge, with which the moderns have enriched the art of healing. They knew nothing of the use of metals or minerals in the cure of diseases, and were quite ignorant of all artificial preparations in medicine. It is certain, that, in ages long posterior to those we are now treating of, physicians knew nothing of the art of distillation. We find no traces of this in any of the Greek writings.

Beating, boiling, infusion, the expression of their juices, and even simple washing, were at first, and for many ages, the only preparations given to medicines, which then, for the most part, if not wholly, consisted of plants, woods, barks, and roots. The operations we have mentioned, were a sufficient preparation for such medicines.

There are not wanting, however, some modern authors, who, from an excessive fondness for an art which they have made the principal object of their studies, imagine they can discern the origin and traces of medical chymistry in the very infancy of the world. They give the honour of this invention to the Egyptians. But these opinions are without any evidence, and there is nothing to be found in the writings of the ancients to countenance them. Herodotus, Plato, Aristotle, Diodorus, Pliny, and Clemens of Alexandria, &c. who have so fully treated of the sciences cultivated by the ancient Egyptians, make no mention of medical chymistry. This was equally unknown to the Greeks, and in general to all the nations of antiquity. It is, in a word, a science absolutely

[†] See l'hist. de la medecine par Daniel le Clerc, part 3. l. 2. c. 2. p. 91. 92.

[†] Borrichius, Kircher, Telius, & plures alii.

modern, and was first invented and cultivated by the Arabians.

C H A P. II.

Mathematics.

IT is not difficult to determine, in general, which were the first sciences to which men applied themselves; but it is impossible to delineate, with certainty, the exact order in which they appeared. Almost all the sciences have equal pretensions to the greatest antiquity. The importance of the subject, rather than any other consideration, determined us to give the first place to medicine; for, if we consult history, we shall find that those sciences comprehended under the name of mathematics, are at least as ancient. Nor need we to be surprised at this. The objects of mathematics are no less interesting to mankind, than those which gave birth to medicine. The slightest attention will be sufficient to convince us of this. Society cannot well subsist without the aid of mathematical studies. What art does not require some knowledge in mechanics? Do not agriculture and navigation entirely depend on the observation of the heavenly bodies? But how could there be either astronomy or mechanics without arithmetic and geometry? Those things then which gave birth to mathematics, are almost of the same date with the commencement of society. There is even room to think that these sciences were reduced into an artificial form earlier than medicine. Their principles are more simple and more obvious. It is true, that as the wants of mankind in the first ages were not very numerous, the mathematical sciences would then be very limited and imperfect.

Arithmetic, astronomy, geometry, and mechanics, are so intimately connected, and stand so much in need of that mutual light which they administer to each other, that their origin must have been nearly in the same period. Yet we may imagine that arithmetic somewhat preceded the other three, as they cannot dispense with its assistance. For this reason we shall place it first.

ARTICLE

ARTICLE I.

Arithmetic.

THOUGH it was probably a long time before the theory of arithmetic was tolerably understood, yet the first operations of that science were certainly practised in the most remote antiquity. As soon as mankind submitted to government, and formed themselves into regular and political societies, the distinction of property took place, and arithmetic became necessary. For the institution of the rights of property is as ancient as the origin of society: and the moment the division of lands and the distinction of property were introduced, the arts of numbering, weighing, and measuring, became indispensable. Consequently arithmetic became necessary in itself, as well as in relation to astronomy, geometry, and mechanics, which cannot exist without the science of calculation. The practical part of arithmetic therefore was undoubtedly very ancient.

The motives which must have concurred to the improvement of arithmetic, are so many and so obvious, that it will be needless to insist upon them. The first discoveries in the science of numbers were no doubt made by the nations who stood most in need of that science. The nations who first formed considerable states, those who applied to commerce and navigation, had the first and most frequent occasions for the use of calculation. In these nations, the persons employed in the management of the public revenues, found themselves involved in long details, and would naturally endeavour to find out methods of abridging and improving the operations in which they were every day engaged. It is amongst the first civilized and commercial nations, therefore, we must look for the origin of the science of calculation.

History agrees perfectly well with what we have now advanced. It informs us, that arithmetic was invented by the Egyptians and Phœnicians^{*}; that is to say, that these two

^{*} Plat. in Phœdr. p. 1240. A.; Strabo, l. 17. p. 1136. B.; Diog. Laert. in procem. segm. 11. p. 8.; Jambl. de vita Pythag. c. 29. p. 135. ; Porphy. ibid. p. 8. & 9.; Julian. apud Cyrill. l. 5.

nations made the first improvements in the practice of the assemblage and calculation of numbers.

The Egyptians must have been in all ages great arithmeticians. They had constant occasion for the science of numbers in the regulation of the government and revenues of their state. Besides this, they applied themselves to the study of astronomy and geometry, as early, and perhaps with more assiduity than any other ancient nation. These motives are abundantly sufficient to account for the rapid progress this people made in the practice of calculation. It was in Egypt Pythagoras learned those theories he published concerning the nature and properties of numbers.

It is not surprising, that the Phœnicians so soon distinguished themselves by their skill in calculation. For as that people applied to commerce in the remotest ages, they were necessarily very conversant in arithmetical computations, and obliged to study that science, perhaps more than any other. It is natural to suppose, therefore, that they would be the first who made considerable discoveries in this art, and fell upon more perfect and easy methods in the practice of it. Ancient history confirms this, and ascribes to the Phœnicians, the invention of the art of casting accounts^u, of keeping registers, and of every thing that relates to the counting-house. I shall speak of these things more particularly in the article of commerce.

We may reckon the Babylonians too amongst the first nations who cultivated the science of numbers. It is true, history says nothing of this; but we have the same reasons to believe this of them, as of the Egyptians. The Babylonian monarchy was more ancient, and at least as powerful in the primitive times as that of the Egyptians. The study of astronomy was common to both nations; and they are acknowledged by all antiquity, to have been the two first nations who applied to that study. We may safely rank the Babylonians, therefore, amongst the first who made improvements in the theory and practice of calculation.

If it were necessary to confirm what we have said concerning the nations who made the first improvements in arithmetic

^u Strabo, l. 17. p. 1136. B.

by the example of all other nations, history would furnish us with materials. The Chinese had considerable knowledge in the art of computation in the remotest times *.

It appears also, that the people of Peru † and Mexico ‡, who formed the only two great monarchies in America, had made no small progress in the science of calculation. These two nations had long enjoyed a regular form of policy and government, which was the true reason they had made such great advances in the arts and sciences.

A greater number of examples would be superfluous. There never was any civilized and regularly governed nation, which had not some tincture of arithmetic, though we see that the greatest improvements in this science have been made in great empires, or by nations who enjoyed an extensive commerce. On the other hand, small states who neglected commerce, made but little progress in the art of calculation. They hardly had any occasion for it, and so could not make any great improvements in it. These observations are confirmed by history.

Plato makes a sophist say of the Lacedæmonians, that they scarcely knew how to number *. The meaning of this is, that this nation, who, according to Plato, were very ignorant both in geometry and astronomy, had made no progress in arithmetic. If we reflect on the constitution of the Lacedæmonian government, we will not be surprised at this.

Strabo relates, that the people of Albania * could never count above 100 †; that they had neither weights nor measures ‡. At the same time he gives us the reason of this, viz. that they had no commerce §.

The state of several nations lately discovered, is a convincing proof of what we have now advanced. The arithmetic

* Hist. de la Chine, par le P. Martini, l. 1. p. 38.

† Hist. des Incas, t. 2. p. 53.

‡ Acosta, hist. nat. des Ind. Occid. l. 6. c. 2. 4. 7.

§ Plato in Hipp. Maj. p. 1248. A.

* The greatest part of this country is at present comprehended under the name of Daghestan.

† Strabo, l. 11. p. 767.

‡ Ibid.

§ Ibid.

of the greatest part of the nations of America, is neither very complicated nor extensive *. They know no better method to represent a great number or quantity, than by shewing a heap of sand, or a handful of their own hair †. Some of them labour under a poverty of expression which is almost incredible. A modern traveller tells us of a certain people in South America, who had no particular word for any number above three ‡. He adds, that this was not the only Indian nation which was in that condition.

If it is easy to point out the countries where arithmetic had its birth and first improvements, it is extremely difficult to delineate the progress of its several operations. Here history affords us no assistance. We can only propose some probable conjectures concerning the manner in which mankind originally applied their knowledge of numbers to the various occasions of civil life.

There is no more comparison between the arithmetic of the primitive times, and that of the present age, than there is between the first huts which men built to defend themselves from the injuries of the air, and the palaces of our present monarchs. The practical arts of calculation are now as perfect and expeditious as can be desired for the benefit of society;

* Journ. des scav. ann. 1666, Avril, p. 99.; Voyage de Wafer, p. 245. & 248. Hist. nat. de Pisslande, t. 2. p. 222.; Mœurs des sauvages, t. 2. p. 351.; Lettr. édif. t. 23. p. 314.

† Lettr. édif. t. 1. p. 124.; Journ. du voyage dans la Guyanne, par les P. P. Grillet & Bachamel Jesuites, p. 95. See Dampier, t. 4. p. 245. 246.

‡ M. de la Condamine relat. de la riviere des Amazones, p. 67.

M. Condamine says, the *Yameos* could count only to three. This expression seems to need some explanation. There may perhaps be nations who have no particular word for a greater number than three, though this is not very probable; but that there are any who cannot count at least ten, and collect as many units as they have fingers, is quite incredible. The *Yameos* perhaps have no particular word to express the number five, but they have certainly some expression equivalent to this three and two. Accordingly this author informs us, that the Brazilian tongue is as defective as that of the *Yameos* in arithmetic; but that the people of Brasil borrow the Portuguese language to express numbers above three, from which it is very evident they wanted not the ideas of greater numbers. I am of opinion, that we ought to form the same judgment of the *Yameos*. It is the more probable that they had ideas of greater numbers than three, that the word they used to express that number would naturally suggest the idea of nine by the syllables which composed it. *Poetarrarorincom oac*, is the word the *Yameos* used to express three.

and the theory of this science seems to be carried to as great a height as the human faculties are capable of attaining.

Modern arithmetic, therefore, can give us no just idea of the ancient, till, by an exact analysis, we have reduced it to its first principles. This is the only method of discovering those operations, which on account of their simplicity would present themselves first to the human mind.

This analysis is not near so difficult as it may appear at first sight. If we examine the principles of this science with attention, we shall find, that its most sublime speculations and ingenious practices depend on two very simple operations, *viz.* addition and subtraction. In effect, multiplication is nothing but the addition of equal numbers; and the composition of powers may be reduced to the multiplication of a number by itself, either more or less repeated. Division and the extraction of the roots bear the same relation to subtraction. It is unnecessary to explain this any further at present. It is in addition and subtraction we must look for the origin of arithmetic, or the art of working upon numbers.

Addition and subtraction presuppose numeration, which some have very improperly considered as a distinct operation. For numeration, properly speaking, is nothing but the common source which furnishes arithmetic with the materials of all its operations. To number, is nothing else but to form ideas of different assemblages of unities, and to assign a name to each of these assemblages. This is the first step of the human mind in the science of numbers.

Every particular object suggests the idea of unity to the mind, and every assemblage of objects or units suggests the idea of numbers, or of a greater or lesser quantity of units. However ignorant the greatest part of mankind became after the confusion of tongues and the dispersion of families, they could never become so stupid as not to distinguish the objects which surrounded them. The distinct ideas of simple numbers could never be lost; the most barbarous people would still be sensible of the numerical relations and proportions of their hands, their feet, their fingers, &c. The fundamental notions of arithmetic, therefore, must have been familiar in the rudest ages.

It

It appears to me equally certain, that the most ignorant and savage nations have always had some words to express these fundamental notions. Thus, in all ages and in all places, mankind have had some knowledge of arithmetic proportioned to their occasions and way of life.

Arithmetic probably began with practical numeration. I call the art of determining the number of several objects, practical numeration, of counting, for example, how many heads are in a flock, or how many trees are in a field, &c. Provided such a collection of units is considerable, we cannot determine with exactness, the sum total by a glance of the eye. Our senses on these occasions suggest only a confused idea of multitude and quantity. To render this idea clear, and to fix it to one number rather than another, after examining the objects one after another, it would be necessary to make use of reason, and to have recourse to memory. Both these faculties are so imperfect in the bulk of mankind, that it would be necessary to assist them by the use of sensible external signs. The necessity of providing such signs would soon be perceived. The institution of these signs, indeed, is an arbitrary thing; but still it must be owned, that there are some more natural and more commodious than others. Consequently, men would be determined in the choice of them, at least by considerations of conveniency.

Nature has provided us with a kind of arithmetical instrument, more generally used than is commonly imagined; I mean our fingers*. Every thing inclines us to think, that these were the first instruments used by men to assist them in the practice of numeration. We may observe in Homer^b, that Proteus counts his sea-calves by fives and fives, that is, by his fingers. Several nations in America have at this day

* We may see in M. Croufay's arithmetic demonstrated, a very ingenious method of multiplying by one another the numbers not above nine, by the help of the fingers, which formerly supplied the place of Pythagoras's tables.

^b Odyss. l. 4. v. 412

Homer uses the word *πενταχῆν*, which signifies to assemble by five and five. Plutarch and several lexicographers tell us, that in the infancy of the Greek language they had no other word for calculating. It then signified what is now expressed by the term *ἀριθμῆναι*.

no other instruments of calculation ⁱ. It was probably the same in the primitive ages. It is another strong presumption of the truth of what I now advance, that all civilised nations count by tens, tens of tens, or *hundreds*, tens of hundreds, or *thousands*, and so on, still from ten to ten. We can discover no reason why the number ten should be chosen rather than any other, for the term of numeration, except this primitive practice of counting by the fingers, which are ten in number ^{*}.

It appears then highly probable, that the first men counted by their fingers, whatever did not exceed their number. Above ten they would count the number of times they were obliged to recommence their decimal numeration, to exhaust the subject of their calculation, besides what remained when the total did not make an exact number of tens. But as their fingers could only serve them to ascertain that remainder of units, they wanted something to determine the number of tens. When this number was too great for the memory to retain with ease, they were obliged to look for new helps. Nature presented them with several things equally proper to assist them in this operation, as grains of sand, corn, pebbles, stones of fruit, &c. Several savage nations ^{*} in both continents practise these methods at this day, and we find the vestiges of these original practices among the most ancient nations ¹.

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ⁱ Voyage de Dampier, t. 4. p. 140.

^{*} It is easy to prove this. For if numeration, for example, recommenced from five to five, and not from ten to ten, multiplication would become much easier. All the difficulty of this operation consists in remembering the product of the numbers under the term of numeration. Now, every body knows that four times four is sixteen, which is the most difficult case in the pentenary arithmetic I am now speaking of; but many people would be puzzled to tell, that seven times nine is sixty-three. I might make several other suppositions equally favourable to what I have advanced. The binary arithmetic of Mr Leibnitz, in my opinion, fully clears up this point.

Aristotle, prob. sect. 15. t. 2. p. 752. informs us, that, in his time, there was a nation in Thrace, who knew no other arithmetic but the quaternary. The reason he gives for this, confirms what I have said. "That people," says he, "have no better memories than young children." It would have been impossible for such a people to have got by heart the multiplication-table of Pythagoras.

^k Voyage de Dampier, t. 4. p. 246.; Mœurs des sauvages, t. I. p. 517.

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^l See Herod. l. 2. n. 36.

What I have been saying concerning the origin of practical numeration, may, I think, enable us to conceive how it was improved and brought to perfection. It is easy to imagine, how by the help of their fingers and a few little stones, men might perform considerable calculations. We need only follow the hints which I have given, and enlarge the plan which I have marked out. If it is demanded, for example, how these primitive arithmeticians managed when they were to count a great number of objects, which obliged them several times to recommence the decimal numeration; I answer, that it seems probable, they marked tens of units by one symbol, and ten times ten, or each hundred, by another. Perhaps they expressed tens by white stones, and hundreds by stones of another colour. After this discovery it would not be difficult to contrive symbols for expressing tens of hundreds, or thousands, &c. &c.

Perhaps the first arithmeticians might make use of symbols of the same colour, to express tens, hundreds, &c. only observing to place them so with regard to one another, as to determine their relative value, as we do with our cyphers which have different values, according to the rank they hold and the place they occupy. By such means mankind might carry the practice of numeration further than their necessities and way of life required.

The invention of these methods of numeration I have been speaking of, would naturally lead men to the knowledge of addition. As soon as they knew how to number with facility a collection of objects, let it be never so great, it would require no great effort to number several of these together, that is to say, to add them. They had nothing to do but to place the symbols of their several numbers under one another, so as to have their units, their tens, and their hundreds, &c. under their eye at once, and then to reduce all these several symbols into one. They would not be long in discovering the art of performing this reduction. They had only to sum up separately

It is probable that pebbles were originally most used in arithmetical operations. The word *calculation*, which we derive from the Romans, probably refers to the use of little stones in such operations. It is the same in Greek. The word $\psi\alpha\lambda\iota\sigma\mu\acute{o}\varsigma$, which comes from $\psi\alpha\lambda\iota\sigma$, a little stone or flint, signifies, among other things, to calculate.

first

first their units, then their tens, and then their hundreds, &c. and to form the symbol of each of these sums, as they discovered them; to do that, in a word, by parts which the weakness of our faculties will not permit us to do at once.

If it was not difficult, as we have seen, to proceed from the practice of numeration to addition, it was still more easy to find out the art of multiplying one number by another. There is reason to think, that multiplication was at first performed by means of addition. The steps of the human mind are naturally slow. It requires no little time and labour to pass the medium which divides one part of science from another, however analogous they may seem to be. At first, therefore, it is probable multiplication and addition made but one operation. Had they, for example, to multiply 12 by 4, they formed the symbol of 12 four times, and then reduced these four symbols into one by the rules we have just laid down.

But this method of multiplication by addition must have been very tedious and perplexing, when either of the numbers to be multiplied was considerable. If they were only to multiply 15 by 13, they had to make the symbol of 15 thirteen times, and then to sum up these 13 symbols. Those who were most practised in calculation, would soon discover that they might abridge this operation, by forming the symbol of 15 three times, and once that of 150, which is the product of 15 by 10, and then sum up these four symbols. Such was probably the first step of the human mind towards multiplication, properly so called, or the art of adding equal numbers with greater facility and expedition. This operation, however, could never be performed with ease, till those who practised calculation had by heart the product of all the numbers under ten.

The account I have here given of the origin of numeration, addition, and multiplication, is so particular, that I hope I may be excused from mentioning my conjectures concerning the manner in which these operations gave birth to subtraction and division. I will not deprive the reader of the pleasure of exercising his own imagination, in finding out the methods which men at first used in decomposing numbers, after they

had found out the art of uniting and collecting them by addition and multiplication. Division is undoubtedly the most difficult of all the simple operations in arithmetic; it would therefore be the last discovered, and not till after society had attained a solid form.

I shall conclude with observing, that probably the language of arithmetic in the first ages was not very copious. I do not imagine, that originally men had particular words for expressing any number above ten. Suppose, for example, they had a mind to express 127, they said, ten times ten, two tens and seven; or rather seven two tens, and ten times ten; for it appears, that the ancient manner of expressing numbers was directly contrary to the present. They always began with expressing their units, next their tens, then their hundreds, &c. This practice appears plainly in the Hebrew text of the scriptures, in Herodotus^m, and even in some later authors. In these we perceive the primitive manner of expressing numbers, by beginning with the most simple quantities; a manner very analogous to the primitive way of numbering, and perhaps the most agreeable to the common procedure of the human mind, from the more simple to the more compound.

I do not know but we might even go a little further, and doubt whether originally they had proper names for all the numbers which are not above ten. The way in which some nations at present express those numbers which contain more than five units, seems to countenance this doubt. The greatest part of the American nations count by fives, and have no proper name for any number above two. If these people have occasion to express the numbers, three, four, or five, they say, two and one, two and two, two, two, and oneⁿ.

The metaphysical connection of the several operations of arithmetic, has established among them a kind of continuity, which has forced me to represent them as arising successively one from another. I could not make any certain interval between the practice of one of these operations, and the inven-

^m See Herod. l. 7. n. 184. &c.

ⁿ Lettr. édit. t. 23. p. 318.; Voyage de J. de Lery, p. 307.

tion of that which immediately follows. But all this is only a systematic order and connection. I am far from thinking, that the erection of such an edifice as we have been describing, did not suffer any interruption. I have only said what I thought most probable, and consulted the light of reason, for want of that of history, which entirely fails us on this occasion.

We cannot however, doubt, but some of the operations we have been speaking of, were known in the ages now under consideration. The balance and weights were used in the most remote antiquity. The scriptures tell us, that Abraham bought the field where Sarah was buried, for 400 shekels of silver, which he weighed before the whole people *. They used then, it is evident, pieces of metal, whose value in commerce was determined by their weight. This is a clear proof, that they had already made considerable progress in arithmetic. For, without this science, the invention of weights and balances could have been of no service. The use of these measures requires more complicated operations in numbers than simple addition.

After having spoke of the origin and first improvements in arithmetic, I imagine it will not be improper to inquire what were the characters anciently used for recording the result of their arithmetical operations.

The invention of numerical characters must have been very ancient. For though flints, pebbles, and grains of corn, &c. might be sufficient for making arithmetical calculations, they were by no means proper for preserving the result of them. The least accident would be enough to discompose such moveable signs, and destroy in one moment the fruit of a long and laborious application. It was however necessary on many occasions to preserve the result of arithmetical operations, and consequently it was necessary very early to invent signs or characters for that purpose. Alphabetical writing was not of the first antiquity †; they must, therefore, have supplied the want of it by some other means. This is what we are now to examine: let us begin with the Egyptians.

* Gen. c. 23. v. 16.

† See *supra*, b. 2. c. 6.

The writings of ancient authors give us but little light into the Egyptian manner of performing arithmetical operations. Herodotus alone has taken notice of this matter. This author says, that the Egyptians, as well as the Greeks, made use of little stones in these operations; but with this difference, that the Greeks ranged their counters, if we may so call them, from left to right, and the Egyptians theirs from right to left ^p. This, by the by, was a natural consequence of the different arrangement of their characters in writing. I have spoke of that in the preceding book ^q.

But this passage of Herodotus gives us no light into the matter we are now upon. For, in the first place, this author says nothing of the form of arithmetical characters among the Egyptians. Besides, the times he speaks of were greatly posterior to those we are now examining. Yet we have reason to doubt, that the Egyptians had invented arithmetical characters before they knew the use of letters. Let us see if we can supply the want of historical information by some conjectures founded on the ancient monuments of that nation which are still remaining.

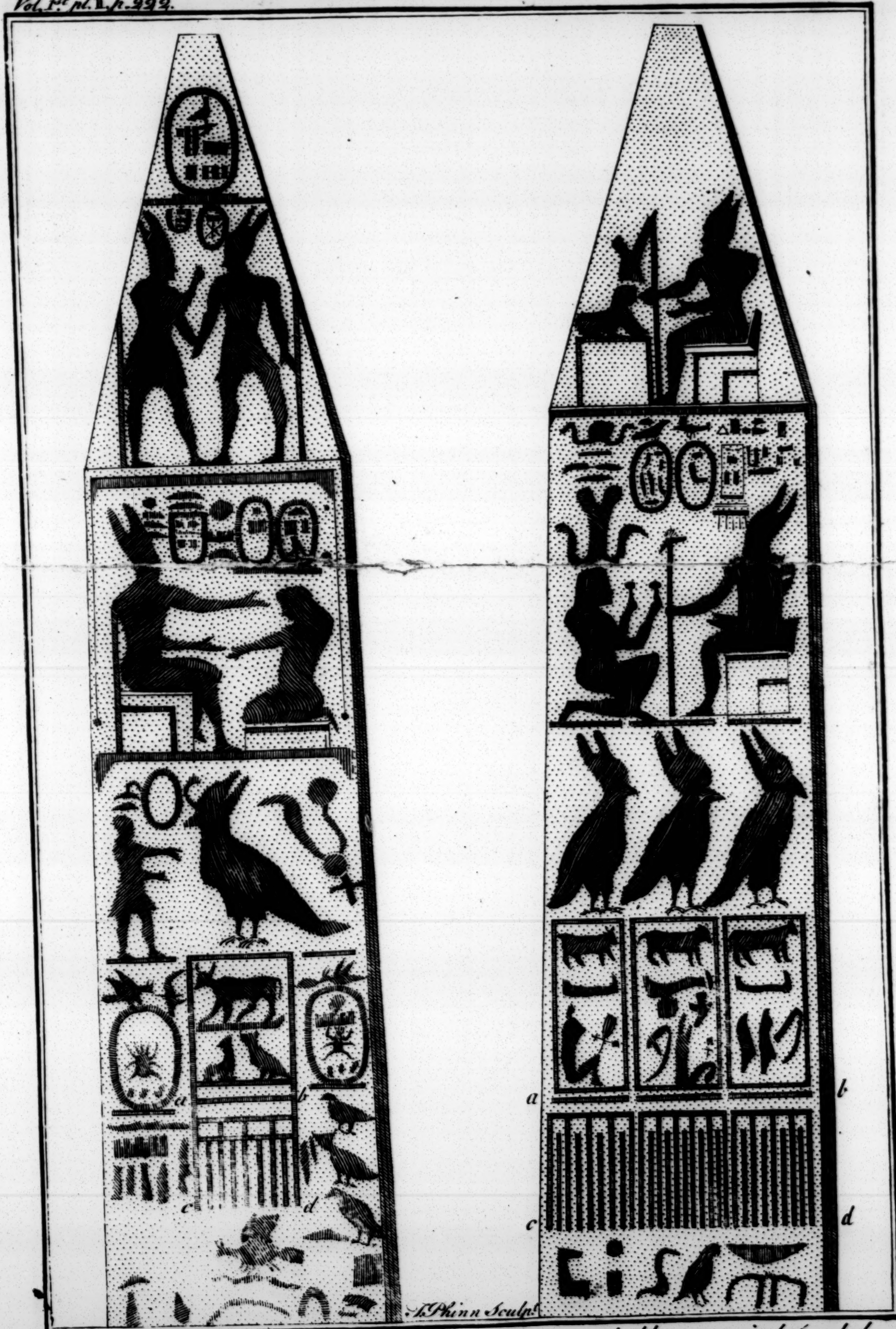
The obelisks must undoubtedly be ranked amongst the most ancient monuments of the Egyptians. We know that these magnificent pillars are covered with various figures, which appear to us extremely odd and whimsical. These figures, known by the name of hieroglyphics, were the ancient writings of the Egyptians ^r. We know further, from the testimony of Diodorus, Strabo, and Tacitus, that the kings who raised these obelisks, had commanded the weight of the gold and silver, the number of arms and horses, the quantity of ivory, perfumes, and grain, which each nation subject to the Egyptians was obliged to pay, to be marked upon these monuments ^s. It is then certain, that some of the figures upon these obelisks were designed to express numbers. The question is, to determine which were these numerical marks, and from thence to judge what were the arithmetical charac-

^p Herod. l. 2. n. 36.

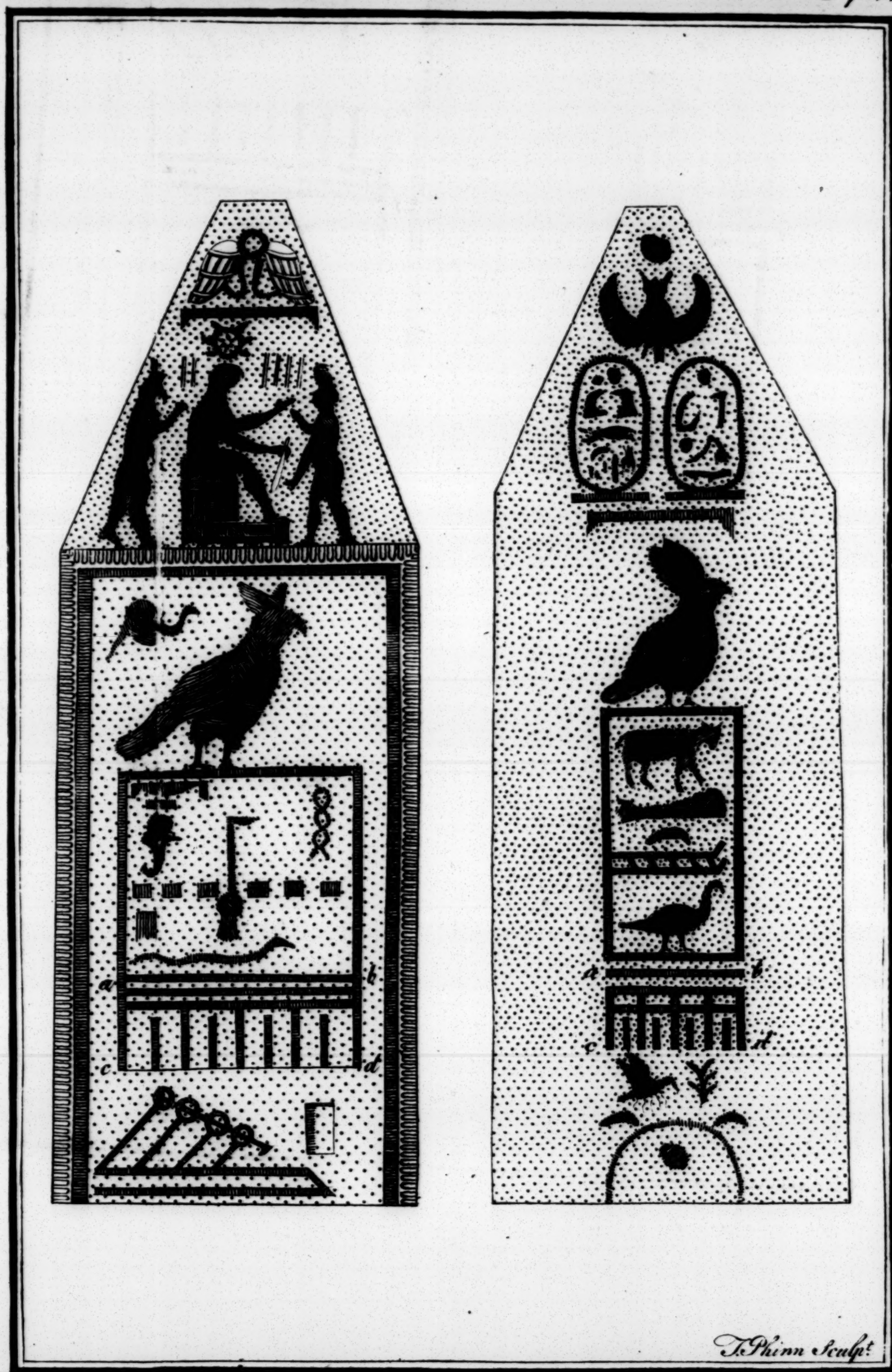
^q Chap. 6. p. 182. & 183.

^r See *supra*, l. 2. c. 6.

^s Diod. l. 1. p. 67; Strab. l. 17. p. 1171. A.; Tacit. ann. l. 2. n. 60.



The perpendicular & transverse lines a, b, c, d, are probably numerical symbols. —



To Plinn Sculpt.

The perpendicular & transverse lines a.b.c.d. are probably numerical symbols.

ters of the Egyptians, before they knew the use of letters. I shall propose the conjectures of one of the most judicious critics of the present age, on this question.

Towards the top of most part of the obelisks, we discover nine perpendicular lines, with some horizontal lines placed above them. M. Bianchini imagines that these nine lines are numerical characters. This thought was suggested to him by the resemblance he fancied he remarked between these lines, and the disposition of those which serve for arithmetical columns, in that table published by Velfer, and in that which the Chinese ascribe to Lixus. He was confirmed in this opinion by the testimony of the authors I have now mentioned, and of Hermapion and Ammianus Marcellinus. These were the reasons which made M. Bianchini suppose that the Egyptians used these lines to express all kinds of numbers [†].

From one to nine, says he, there is no difficulty, but to place a ball or point underneath one of the nine perpendiculars, to represent so many pounds of gold, according to the place of that perpendicular, counting from right to left. Suppose, for example, that the point was under the fifth line, that expressed five pounds of gold; if it was under the seventh, it expressed seven. The numbers above nine might be represented by means of the horizontal lines placed above the perpendicular. The horizontal lines probably determined the perpendicular ones to signify tens, hundreds, thousands, &c. instead of units, according as the number of these transverse lines were one, two, three, &c. ^{*}.

And

[†] La istoria univ. p. 106. &c. ; Essai sur les hierogl. des Egyptiens, p. 612. note ^d.

^{*} M. Bianchini proposes some examples to confirm these conjectures. Let us suppose, says he, that the Egyptians had a mind to represent, that a prince undertook an expedition in the seventh year of his reign. They might draw a bee, (the emblem of a king, according to Ammianus Marcellinus), with wings extended, and make it answer to the seventh perpendicular line. If they were to express that Lybia paid yearly 70 pounds of gold, they had only to draw one transverse line, and put a proper sign above the seventh perpendicular. Then the sign which would have expressed only 7 units without the transverse line, by means of that line would express 7 times ten. By increasing in this manner the number of these transverse lines, they might express 7 hundreds, 7 thousands, &c. To shew that these numbers represented so many pounds of gold or silver, they might place under the numerical sign, the hieroglyphic which represented gold or silver. The same may be said of

An arithmetic of this kind, composed of perpendicular and transverse lines, was the origin of the numerical figures both of the Greeks and Romans. Units in the primitive operations were represented by lines drawn perpendicular, like the letter I in our alphabet *. There is reason to believe, therefore, that the Egyptians used these nine lines, which we find on their obelisks, rather than any other kind of characters, to express numbers, especially as we know that the ancients used only these two kinds of signs, perpendicular and transverse lines, in arithmetic *.

The Egyptians were not the only people who found means to preserve the result of their arithmetical operations, without the knowledge of letters. I have spoke in the preceding book of the quipos of the Peruvians. This was, as we have heard, a kind of fringe, composed of threads, or cords of different colours, loaded with a certain number of knots. These quipos, by the combinations of their knots and colours, served the Peruvians for books, and for registers of their subdivisions, taxes, and, in a word, of all their arithmetical operations *. From the monuments of the Mexicans, which are

of the numbers of soldiers, of presents, &c. as also of years, months, days, when they were recording astronomical observations.

The inspection of the obelisks inclines us to think, that these signs were ranged from top to bottom; from whence it will be natural to conclude, that the hieroglyphic writing of the Egyptians was also disposed in this manner, and formed perpendicular columns. This seems very probable; for the Chinese, the greatest part of the people of India, and several other nations, have observed, and still observe this order in the disposition of their letters. They do not place their words horizontally, as we do, but beginning at the top, they write to the bottom in a straight line. This may be considered as a relic of hieroglyphic writing.

* Bianchini, *loco cit.* p. 112.

* This confirms what we said above, that the origin of cyphers or numerical characters was confounded with that of hieroglyphic writing. To this day the Arabian cyphers are real hieroglyphics, and do not represent words but things. For which reason, though the nations which use them speak different languages, *i. e.* express themselves in different sounds, yet these characters excite the ideas of the same numbers in the minds of all.

* Hist. des Incas, t. 2. p. 53.

It is the same with the negroes on the coast of Juida. They know nothing of the art of writing, and yet they can calculate the largest sums with great facility, by means of cords and knots, which have their own signification. Hist. gen. des voyages, t. 4. p. 283. 373. & 394.

still

still remaining, it appears, that hieroglyphics were used by that people, both for letters and numerical characters ^y.

Finally, I do not imagine that the wisest and most civilized nations had carried their discoveries in arithmetic beyond the four operations of addition, multiplication, subtraction, and division, in the ages now under consideration. Men are only industrious in proportion to their wants. The societies which were formed in the ages immediately after the confusion of tongues and dispersion of families, did not probably derive all the advantage from the arithmetical symbols they had invented, they might have done. The calculations they had then occasion to make, could not be very extensive. The four first rules of arithmetic would be sufficient to answer all their purposes. We may even affirm of these first arithmeticians, that it was rather the use than the science of numbers, that they were acquainted with. The invention of these four rules was a great deal for 700 years. We could mention several sciences, which, every thing considered, have not made such rapid progress.

A R T I C L E II.

Astronomy.

WE must never hope to be able to determine with certainty the precise time when men began to study the course of the stars. The origin of astronomy, if by this expression we understand the first observations which were made on the motions of the heavenly bodies, is lost in the abyss of antiquity. We see from the sacred books, that, in the very first ages, men must have had some method of measuring time. The calculation which Moses gives us of the length of the first patriarchs lives, and the manner in which he describes the circumstances of the deluge, leave us no room to doubt of this. The memory of

^y Acoſta, hiſt. nat. des Indes Occident. l. 6. c. 7.

these things was undoubtedly preserved by the posterity of Shem, otherwise Moses could not have informed us of the facts I have mentioned.

These remains of astronomical knowledge, however, which might escape the deluge, could not be of much service to the bulk of the descendents of Noah. I have already represented the effects which the confusion of tongues and dispersion of families produced in the several regions of the earth ^a. If the arts perished in these transigrations, we have still greater reason to believe that the sciences would be entirely lost. The deluge seems to have swept away every monument of the arts and sciences from all mankind, except Noah, and a few of his descendents, who continued in the place where that patriarch had settled after he left the ark ^a.

Necessity soon obliged the new inhabitants of the earth to study the course of the stars. The operations of agriculture are regulated by the observation of the seasons. Navigation depends on the motions and revolutions of the heavenly bodies. Nothing but the division of time into years, months, &c. could introduce order into the affairs of civil society, and distinguish the seasons destined to religious solemnities ^b. Men would soon apply therefore to the study of a science of such general utility. Yet as there is no science which depends so much on the length of time as astronomy, it must have been very long before it arrived at any great perfection.

The nations who were first settled under a regular form of government, would make the first improvements in this science. The advantages of a settled state and happy situation, would enable them to make the earliest and the greatest progress in this kind of knowledge. In Egypt and several parts of Asia, the air is perfectly pure and serene almost through the whole year; this gave their inhabitants a favourable opportunity of contemplating the heavens, and observing the various motions of the stars, and of repeating the same observations as often as it was necessary. If mens talents are unfolded in proportion to the opportunities they have of exercising

^a *Supra*, l. I. p. 3.

^a *Ibid.*; Academie des sciences, t. 8. p. 1. & 2.

^b *Ibidem*.

them, how many astronomers would appear in Egypt, Chaldea, and Arabia^c, countries so happily situated for the study of that science? Accordingly the Babylonians and Egyptians were more famous than any other ancient nations, for their skill and constancy in observing the motions of the heavenly bodies^d.

Every thing contributed to the improvement of astronomy among the Babylonians. The great antiquity of their government^e, the beauty of their climate, the situation of Babylon, in the midst of an immense plain, open on all sides, affording an unbounded prospect, the most proper for astronomical observations^f.

The way of life too of the first inhabitants of Chaldea favoured the progress of astronomy. Tending their flocks was one of their chief employments. Agriculture too was practised by them in very early times^g; so that passing the greatest part of their days and nights in the open fields, they had the various motions of the heavenly bodies constantly in view.

We may add further, that never any nation had so great occasion for the knowledge of astronomy, as the people of Chaldea. These countries consist, for the most part, of immense plains, where loose sands, driven about by the winds, leave no traces of any road. The stars, therefore, are their only guides in their journeys, especially as the excessive heat of the climate does not permit them to travel in the day-time^h.

^c Acad. des scien. ann. 1742, h. p. 31.

^d Plato, in Epinomi. p. 1012.; Arist. de cœlo, l. 2. c. 12. t. 1. p. 464.; Plin. l. 7. sect. 57. p. 416.; Clem. Alex. Strom. l. 1. p. 361.; Achill. Tat. ad Arati phæn.; init. Jamblic. de vita Pythag. c. 29. p. 135.

^e Gen. c. 10. v. 10.

^f *Principio Assyrii, propter planitiem magnitudinemque regionum quas incolabant, cum cælum ex omni parte patens & apertum intuerentur, trajectiones motusque stellarum observarunt.* Cicero de divinat. l. 1. n. 1. t. 3. p. 3.

We may observe, that the plain called in scripture *Shinar*, where Babylon was built, is the same which the Arabians call *Sin-Jar*. Almamon, the seventh Caliph of the Abassides, caused astronomical observations to be made in this place, which served all the astronomers of Europe for several ages. Gelaled-din Melik-Schah, the third Sultan of the Seljukides, caused the same to be done in the same place near 300 years after. Acad. des inscript. t. 1. m. p. 5.

^g *Supra*, l. 2. chap. 1. p. 86. & 87.

^h Voyage des Ind. orient. par Carré, c. 1. p. 230.

The Chaldeans too have been esteemed by all antiquity the inventors of judicial astrology. This vain and ridiculous study would oblige them to find out methods of determining the motions and aspects of the stars. Without the knowledge of these things they could not draw their horoscopes. So that astronomy owes its greatest improvements to this frivolous art of reading the fates of men in the face of heaven *.

After these reflections, it will not appear surprising, that the Chaldeans were ranked among the first observers of the heavenly bodies. Belus, one of the first kings of Babylon, is even considered as one of the inventors of astronomy †. But there are no monuments of these ancient discoveries now remaining. They tell us, it is true, of a course of astronomical observations sent to Aristotle from Babylon, by Callisthenes who attended Alexander in his expedition. This comprehended, as they pretend, a space of 1907 years, from the commencement of the Babylonian monarchy to the expedition of Alexander into Asia *. According to this calculation, the Chaldeans made their first astronomical observations in the year 115 after the flood.

But this story deserves no credit. It was first published by a very modern writer, Simplicius, a Peripatetic philosopher, who flourished only in the sixth century of the Christian æra. This commentator does not even pretend to have found this story in any of Aristotle's writings; he took it from Porphyry, a Platonic philosopher, not much more ancient than himself †. These authorities are too modern to merit any regard. Hipparchus and Ptolemy, who lived long before Porphyry and Simplicius, knew nothing of these pretended observations, though they had made a very diligent search after the writings of the most ancient astronomers. They could meet with no

* Kepler very justly observes, that astrology is the foolish daughter of a wise mother, and that, for 100 years past, this wise mother could not have lived without the help of her foolish daughter. *Præfat. ad tabul. Rudolphin. p. 4.*

† Plin. l. 6. sect. 30. p. 331.; Solin. c. 56. *init.*; Achill. Tat. ad Arat. phæn. *init.*; Mart. Capella, l. 6. de Babyl. p. 225.

* Porphyry. *apud* Simplic. in l. 2.; Aristot. de cælo, fol. 123. *recto*, lin. 18.

† Porphyry lived in the third century, and was a modern in comparison of the times we are treating of.

observations made at Babylon before the reign of Nabonassar ¹. We may take it for granted, therefore, that we have no authentic information of the state of astronomy at Babylon before the reign of that prince, who mounted the throne in the year 747 before J. C.; every thing preceding this is only vague tradition, about which we can form no certain judgment ^m.

What I have said concerning the motives which occasioned the first improvements in astronomy among the Babylonians, may very well be applied to the Egyptians. They were equally infatuated with judicial astrology ⁿ, had the same advantages in the antiquity of their monarchy, their early application to agriculture ^o, and the beauty of their climate. In this respect the Egyptians were even more happily situated than the Chaldeans. Being placed pretty near the equator, they could discover the greatest part of the stars, and the revolutions of the heavenly bodies would not appear so oblique to them, as to the Chaldean astronomers. We may add to all these considerations, that high relish and constant application to all the sciences with which the Egyptians were endowed.

We have somewhat better information of the ancient astronomical discoveries of the Egyptians than of the Chaldeans. It is acknowledged by all antiquity, that they were the first who gave a certain form to their year ^p. They divided it, says Herodotus ^q, into twelve months, by the knowledge they had of the stars. These months, at first, had no particular names, but the first month, the second month, the third month, &c ^r.

¹ See Marsham. p. 474.

^m See les mem. de Trev. Janv. 1706, art. 8.

ⁿ Herod. l. 2. n. 82.; Cicero de divinat. l. 1. n. 1. t. 3. p. 4.; Plut. t. 2. p. 149. A.

^o *Supra*, l. 2. chap. 1. p. 86, & 87.

^p Clem. Alex. Strom. l. 1. p. 361.; Jos. antiq. l. 1. c. 3.; Macrob. Saturn. l. 1. c. 12. p. 242.; Lucian. de astrolog. p. 362.

^q L. 2. n. 4.

^r See les mem. de l'acad. des inscript. t. 14. m. p. 334.

We may be convinced of this, by the manner in which Moses, who was well versed in astronomy, relates the circumstances of the deluge. He gives the months no other names, but the second, seventh, tenth, and first months. Gen. c. 7. & 8.

It is impossible to determine the form and duration of the original Egyptian year of twelve months, whether it was at first only a lunar year, consisting of three hundred and fifty-four days, or whether it consisted of 360, from the time of its first institution. We know only, that the year of 360 days was of great antiquity in Egypt, and had been used before the age of Moses. This is evident, because it is by this year that legislator reckons the years of the world, and particularly of the deluge^r.

The facts which are recorded in history on this subject, are so few, and so general, that they cannot enable us to form a judgment of the state of astronomy in these remote ages we are now examining. We are not informed of the methods originally used for discovering and measuring the course of the stars, nor of the successive improvements made in this science. Let us, however, endeavour, by collecting all the little light we have, to form some probable conjectures about the beginnings of this science, at all times so necessary and useful to society.

We have reason to believe, that the institution of that short period of seven days, called a *week*, was the first step taken by mankind in dividing and measuring their time. We find, from time immemorial, the use of this period among all nations, without any variation in the form of it. The Israelites, Assyrians, Egyptians, Indians, Arabians, and, in a word, all the nations of the east, have in all ages made use of a week, consisting of seven days^r. We find the same custom among the ancient Romans, Gauls, Britons, Germans, the nations of the north, and of America^u. Many vain conjectures have been formed concerning the reasons and motives which determined all mankind to agree in this primitive division of their time. Nothing but tradition concerning the space of time employed in the creation of the world, could give rise to this universal immemorial practice.

But this measure of time was too short, and of little use

^r See below, p. 237.

^u See Scaliger de emendat. temporum.; Selden de jure nat. & gent. l. 3. c. 17. &c.; Mem. de l'Acad. des inscript. t. 4. p. 65.

^v See le spectacle de la nature, t. 8. p. 53.

for regulating the labours of the husbandman. There was a necessity for finding out some other, more proportioned to the business and occasions of society. It could not be long before men observed, that the moon passed through all the various changes of her phases in about four weeks, and that, at the end of that time, she began again to pass through the same changes. It was easy then, by adding the number of days which the moon took up in each of her four changes, to find out the space of her entire revolution from west to east. Such was probably the origin of months.

We find, that, in the first ages, the year, in almost all nations, consisted only of one lunar month *. This is a demonstration, that, in these ages, men knew nothing of the year properly so called, and that they had no longer measure of time than a lunar revolution *. It is even probable, that as the moon comes in conjunction with the sun in somewhat more than

* Diod. l. i. p. 30. ; Varro *apud* Lactant. inst. l. 2. c. 13. p. 169. ; Plin. l. 7. sect. 49. p. 403. ; Plut. in Numa, p. 72. B. ; *Ex* Eudoxo, Proclus, in Tim. p. 31. ; Stob. eclog. phys. p. 21 ; Gemin. p. 34. ; Suid. in voce "Ηλιος, t. 2. p. 54.

Ouaiki, a Chinese historian, says also, that Tiho-ang, second Emperor of the first dynasty, divided the day and night, and ordered that thirty days should be one moon.

* I am not ignorant, that several critics will not admit of these years of one month. This, they say, is only an hypothesis, contrived in later ages to account for the excessive length of the reigns of some ancient kings. The chief reason of these critics for rejecting years of one month, is, that, by admitting them, we fall into a contrary extreme. For, according to this calculation, even those who are said to have died in extreme old age, could not have been above 27 or 28 years old ; from thence it would follow, that they had children at two or three years of age.

To this I answer, that we must not use this year of one month, to fix and determine the chronology of profane history in these first ages. I am fully convinced that these historians did not use it. The first ages knew not how to record events with exactness ; their notions of chronology were quite confused, and they spoke on that subject in a manner at random. In later and more enlightened ages, when they began to write the history of the primitive times, and consult the ancient traditions, these were so confused and changed, that they unavoidably betrayed these writers into many errors. This is the true source of all the difficulties we meet with in the chronology of ancient nations. They had originally no certain rules or measures to determine the duration of time. None but the Israelites can give us any light into this matter ; this is an evident advantage in their history, above that of any other nation. The family of Shem preserved this knowledge of chronology, to which all other nations were strangers for many ages.

twenty-nine days and an half, the first men, not very exact in observing small differences, would fix the duration of their months at first at thirty days ^v.

Such an incorrect method of measuring time could only subsist a little while in the infancy of the world. The various productions of the earth required the use of some longer period than a lunar revolution. The distinction of the seasons, to which they also gave the name of years, came next into use. It is for this reason we find years of three, four, and six months, mentioned in ancient authors ^z. The negroes of Gambia, at this day, reckon their years by the periodical rains which fall in their country ^a. By degrees men found out a measure of time approaching nearer to our present year. They could not be very long in taking notice, that twelve revolutions of the moon visibly brought about the same seasons, and the same temperature of the air. After this discovery it was not difficult to divide the year into twelve parts, nearly equal. In tracing this genealogy of the measures of time, we clearly perceive the reason why the year was at first lunar, consisting of 354 days. This was the form of the year amongst the most ancient nations ^{*}. They retained this form a longer or a shorter time, according to their slower or quicker improvements in science, and their various ways of life. The Tartars, Arabians, and all other nations who derive their subsistence more from the flesh and milk of animals, than from the fruits of the earth, make use of the lunar year to this day [†].

^v See Diod. l. 1. p. 30.; Syncell. p. 38. What I have said of the Chinese a little above, p. 231, note ^x.

^z Diod. l. 1. p. 30.; Plin. l. 7. sect. 49. p. 403.; Censor. de die nat. c. 19.; S. Aug. de civit. Dei, l. 12. c. 10.

^a Hist. gen. des voyag. t. 3. p. 207.

^{*} The festivals of the new-moons, though there were no historical monuments, would be sufficient to establish this fact. All ancient nations celebrated every new moon with feasts. See Spencer de leg. Hebr. ritual. l. 3. c. 1. dissert. 4.

The celebration of the new moon is found among the nations of America. Hist. des Incas, t. 2. p. 36. & 44.

[†] It is for this reason the savages have hardly any knowledge in astronomy. Their way of life does not require it. The greatest part of these nations procure their subsistence by hunting and fishing, and not by agriculture. In consequence of this way of life, they have no fixed abode, and do not need any measure of time to regulate their affairs.

The manner in which I have said the months were originally regulated, might, it is true, give us room to think that the year, in these primitive times, must have been longer than I have supposed it. We have seen, that probably the first men reckoned a synodical revolution of the moon thirty days. It would be natural to conclude from thence, that their year of twelve months consisted of 360 days. Yet I do not imagine that this was really the case. There is reason to believe that this computation of thirty days to a month, was only, if we may so speak, provisional, and did not take place till they came to form their year into twelve lunations. They then rectified the former computation, by suppressing some days, according to the real time of the moon's revolutions. We know that this was practised by all the nations of antiquity. In the first ages, they reckoned the beginning of the month from the day of the moon's first appearance ^b. Accordingly we find that some months consisted then of thirty, and others only of twenty-eight days. This way of regulating the months of the lunar year, is still practised in several countries ^c.

Even this regulation of the year could not continue very long, where-ever agriculture was the principal occupation. The difference between the lunar and the real solar year is so considerable, that, in less than seventeen years, the seasons would be quite inverted, summer taking the place of winter, and winter of summer. They would in a little time be constrained to make some reformations in their way of reckoning, which probably at first were but very imperfect.

Though the course of the moon was certainly the first rule which men followed in measuring their time, yet we cannot doubt, but that they very soon began to make observations on the motion of the sun. The approach and departure of that luminary, the longer and shorter days, the vicissitude of seasons must have been the objects of human study and observation, in the very first ages of the world. They must soon have taken notice of the variations in the largeness of the me-

^b See Cicer. in Verr. act. 2. l. 2. n. 52. t. 4. p. 244.

^c Voyage de Chardin, t. 5. p. 117. t. 7. p. 438. ; Voyag. de Pyrard, p. 100. &c. ; Rec. des voyag. au Nord, t. 10. p. 175.

ridian shadows: these are so striking, that they could not long escape their observation. They must have perceived also, that, at the distance of some time, the sun very visibly changed the place of his rising and setting in the horizon. From observing all these appearances, they would come to find out, that an annual revolution of the sun considerably exceeded twelve lunar months. It is to be supposed, that they would then endeavour to find out some method to determine how much this excess was.

Several means might have been employed in these primitive times, to find out the annual revolution of the sun; such as the return of that luminary to the same stars, which they formerly believed to be fixed; the inequality of shadows in each season; the notice they took of the different points of the horizon where the sun seemed to rise and set. Let us be a little more particular.

That prodigious multitude of stars which appear during the night confusedly scattered in the heavens, without any seeming order, were in the first ages only objects of idle curiosity. There is room to think it would be some time before men so much as suspected, that these stars could afford them any direction or instruction. But probably this period was not very long. Agriculture and navigation, which have been the real sources of astronomy, and the chief causes of its improvement, would soon lead men to study the order and position of the fixed stars. They could not be long in perceiving, that their appearance, a little before the rising, or a little after the setting of the sun, might furnish them with some very easy and useful instructions*. The moon could not be of such great utility. They would therefore have recourse to the stars, whose heliacal rising and setting is evidently uniform from year to year.

As soon as men began to observe the apparent course of the fixed stars, they would perceive, that the sun had a peculiar movement of his own, and contrary to that which seemed every day to carry the whole firmament along with it. From thence they would begin to look for some fixed point in the

* This is what is called the *heliacal* rising or setting of the stars.

heavens

heavens to which they might refer, and with which they might compare the motion of that luminary, and by this means determine the course which he pursued. They would begin with taking notice of and naming those stars which the sun obscured each month at his setting, and those which successively emerged from his rays, and showed themselves before his rising. It was thus, by making themselves acquainted with every star under which the sun passed; from his departure from any particular star chosen at pleasure, to his return to that same star, that they might originally come to determine the bounds of the annual course of that luminary ^a.

We may imagine too, that the observation of the meridian shadows might be of some service in leading men to the knowledge of the duration of the solar year. This method seems to have been much used among the Egyptians ^e, Peruvians ^f, and Chinese ^g. Gnomons were the first astronomical instruments invented by these nations ^h. Nature has pointed out these measures to men. Mountains, trees, buildings, are so many natural gnomons, and suggested the idea of artificial ones, which have been erected in almost every country.

It appears likewise probable, that the observation of the points in the visible horizon where the sun arose and set, might originally contribute to determine the length of the solar year. The first men passed a great part of their time in the open fields. About the time of the equinoxes, they might observe, that, on such a day of such a month, the sun arose or set behind a certain tree, rock, or mountain. The next day they would take notice, that this luminary set or arose at some distance from that place, since, at the equinoxes, the sun's declination changes sensibly every day. Six months after they would observe the sun's return to the same point, and at the end of twelve months they would observe the same again. This method of determining the duration of the year is abundantly

^a See Ptolem. Almagest. l. 3. c. 2.

^e See part 2. b. 2. ch. 2. art. 2.

^f See Phist. de l'astron. Chin. dans les observations mathem. publiées par le Pere Souciet, t. 1. p. 3. t. 2. p. 5. 8. & 21.

^g See Phist. des Incas, t. 2. p. 37. & 41.

^h *Locis citis*

exact, and at the same time very simple. I am inclined to think that this method was used in the first ages. For, of all the terms to which they could refer the course of the sun, the visible horizon is the most obvious and striking. This too is an observation, which it was in every one's power to make. I confess, however, that there are no traces of this to be found in history.

Whatever were the methods which were originally employed for discovering the annual revolution of the sun, these discoveries would for a long time be very imperfect, for want of astronomical instruments, and machines proper for measuring the different divisions of time with precision. According to all appearances, all that they aimed at for a long time, was to make the solar and the lunar months agree, by adding six days to every twelve lunar months. In consequence of this, they formed their civil year of 12 months, consisting of 30 days each, which make 360 days. By this means, that total inversion of the seasons, which was brought about in less than seventeen years, while the year consisted of 354 days, was not produced till after 34 years. As this reformation was still imperfect, we have reason to suppose, that from time to time they added or suppressed a certain number of days or months, as they found occasion, to reduce things into some tolerable order. We learn from history, that such expedients have been often used *. It appears to me more natural to admit of this conjecture, than to imagine, contrary to the testimony of all antiquity, that the length of the solar year had been fixed in the very first ages after the flood at three hundred and sixty-five days.

It is demonstrable, that, in Moses's time, the year consisted only of 360 days. We may soon convince ourselves of this by examining his calculation of the duration of the deluge. We there see, that the year, which he makes use of, consists of 12 months, of 30 days each, and he says nothing that can

* When Julius Cæsar reformed the calendar, he was obliged to add two months, besides the intercalary month, Mercedonius, invented by Numa. When Gregory XIII. undertook to reform the Julian calendar, he was obliged to suppress ten whole days.

give us any reason to think, that they then knew any thing of the necessity of adding any days to the 360, in order to make the civil year of the same duration with one annual revolution of the sun ⁱ.

The unanimous testimony of ancient authors assures us also, that the greatest part of the nations of antiquity, even the most enlightened, for many ages, knew no other year but that of 360 days ^k. It is likewise certain, that the solar year of 365 days was no where introduced till long after the period we are now considering ^l.

We shall now make a few observations on the methods used at first for measuring the lesser divisions of time. The art of measuring and numbering the moments which elapse in the course of a day, is a discovery of such importance, as very well deserves an inquiry into its original. The most common and universally received division of time is into days, months, and years. These, says Plato ^m, are the three parts of time. Homer ⁿ often mentions them. But mankind would very soon be desirous of dividing their time into smaller portions. In order to this it was necessary to find out some method of dividing a day into so many equal parts.

Rude and ignorant nations who had no artificial methods of measuring time, made use of such as nature presented them with. The inhabitants of Iceland regulate their time by the tides ^o. The Chingulais, who have neither clocks, nor sundials, measure their time by a certain flower which expands itself regularly every day, seven hours before night ^p. In

ⁱ In reading the Mosaic account of the deluge, it seems clear to me that the year Moses uses consisted of 360 days. According to that account, Gen. c. 7. v. 11. & 24. c. 8. v. 3. & 4. the deluge began on the 17th day of the second month, in the 600th year of Noah. The waters increased and continued to cover the earth for 150 days to the 17th of the 7th month, when the ark rested on the mountains. Five months of the year then which was used in Moses's time was equal to 150 days; consequently, each of these months consisted of 30 days, and the whole year of 360.

^k See la dissert. de M. Allen, insérée dans la théorie de la terre par Whiston, l. 2. p. 144.

^l See part 2. b. 3. chap. 2. art. 2.

^m In Tim. p. 1004. ⁿ Odyss. l. 11. v. 293. l. 24. v. 141.

^o Hist. nat. de l'Islande, t. 1. p. 260.

^p Hist. gen. des voyages, t. 8. p. 533.

Madagascar, they judge of the hour by the length of the shadows of bodies placed in the sunshine ^a. It is obvious how imperfect all these methods are.

The civilized nations of antiquity made use of various means for dividing time into equal parts. Water-clocks and sun-dials seem to have been the most ancient instruments; and most generally used for this purpose. We learn from ancient traditions, that water-clocks were the very first machines employed for the artificial measuring of time. The Egyptians place this invention in the most remote ages of antiquity. Mercury, say they, had observed, that the Baboon staled twelve times a-day, at equal distances of time. He took the hint from this, and contrived a machine which produced the same effect ^r. From this narration, stript of that fiction in which the ancients involved the history of their first discoveries, we learn, that the Egyptians had found out the art of measuring time by the running of water. The use of this machine continued many ages among that people ^r.

We know likewise, that it was by means of water-clocks; that the Chinese astronomers computed the intervals of time which elapsed between the passage of a star by the meridian, the rising or setting of the sun, the length of days, &c ^t. It was by the help of such a machine too, as is imagined, that the first astronomers divided the zodiac into twelve equal parts ^u.

It appears, therefore, that the invention of water-clocks was very ancient; though I will not take upon me to affirm that this machine was known in the ages we are now examining. I find still fewer traces of the antiquity of sun-dials.

In general, we have great room to doubt, whether the art of dividing the day into hours, or equal parts, was known in these first ages. The books of Moses rather confirm than remove these doubts. The angels are said to have appeared

^a Hist. gen. des voyages, t. 8. p. 624.

^r Plinianæ exercitat. p. 643. 644.

^t See Hor. Apollo, l. i. c. 16.

^u Histoire de l'astronom. Chin. par le P. Gaubil, publiée par le P. Soucier, t. 2. p. 5.

^v See below, p. 245.

to Abraham in the heat of the day *. On all occasions the different times of the day are described in a vague, uncertain manner, as, *When the sun was going down, at even, at morning, at sun-rising, &c* †. From these expressions it seems probable, that they had not then invented any artificial method of subdividing the day into equal parts *.

It would very soon be found necessary to contrive some method of keeping an account of time. In the first ages men were ignorant of the art of writing; but they supplied this want by various methods, of which we find still some traces left in history. Herodotus tells us, that when Darius prepared to march against the Scythians, he committed the guard of the bridge he had built over the Danube, to the Ionians. Before he set out, he made sixty knots upon a cord, and having assembled the leaders of the Ionian troops, he harangued them thus, "Take this cord, and do as I am going to direct you. As soon as I am gone, untie each day one of these knots; if I am not come back when they are all untied, you may return into your own country ‡." We may, I think, consider this cord as a kind of almanack; and from thence conclude, that, even in the days of Darius, they were still very ignorant in the art of computing time.

We find examples of the like practices in several other countries. I have spoke in the preceding book of the quipos of the Peruvians †. These kind of cords served them for calendars and almanacks ‡.

When the natives of Guyana prepare to take a journey, the chief of the nation, before their departure, takes a cord, on which he ties as many knots as they propose to spend days on their expedition. When they arrive at the place of their destination, they hang up this cord in the middle of the great

* Gen. c. 18. v. 1. † Ibid. c. 15. v. 12. c. 19. v. 1. 15. 23.

‡ It may perhaps be answered, that it is not the custom of historians, to name the precise hour when the events happened which they record. But it plainly appears to have been the intention of Moses to point out the very hour when those things which he mentions happened.

‡ L. 4. n. 98.

‡ Chap. 6. p. 171.

‡ Hist. des Incas, t. 1. p. 128.

Karbet ; and take care to untie one knot each day. By this kind of almanack, every one takes his measures to prepare for his return ^e.

In the first years of the Roman republic, when the art of writing was scarcely known to that people, they drove a nail every year into the wall of the temple of Minerva ^d. By the number of these nails they computed the number of years ^e. This was practised by several other nations of Italy ^f.

We may imagine, there were several other methods originally used for reckoning their days, months, and years.

Having given this general view of the state and progress of astronomy in the ages which are the subject of this first part of our work, we shall now proceed to a more minute consideration of some particular discoveries which we have but just named.

S E C T. I.

Of the origin of the constellations and of the zodiac.

TH E number of the fixed stars is so great, and their disposition seems to be so confused, that in order to know and distinguish them from one another, it was necessary to divide the immense vault of heaven into different parts, and then to take notice of what was most remarkable in each of these divisions. The azure ground on which the heavenly bodies seem to be scattered, being perfectly smooth and uniform, it was impossible to distinguish the parts of it, but by the difference of the stars which appeared in it. This difference consists in the greater or smaller number of stars in each clustre, in their various degrees of brightness, but especially in their position with respect to one another. It was necessary

^e N. relat. de la France Equinox, p. 183.

^d T. Livius, l. 7. n. 3. ; Festus, voce *Clavus*, p. 82.

It was believed by the ancients, that Minerva invented arithmetic. T. Livius, loco cit.

^e Titus Livius, l. 7. n. 3.

^f Tit. Livius, loco cit.

to affix particular denominations to each of these clusters, and even to give names to some of these stars. This is what we call a *Constellation*.

After what I have said of the great ease, utility, and extent of the instructions which the first men might receive from observing the fixed stars, we have reason to believe that the constellations had their origin in the ages we are now considering. The scriptures favour this opinion. Three constellations are mentioned in the book of Job ^z. There is mention also made in that work of the *Chambers of the South* ^h, by which are commonly understood the constellations near the south pole, which are invisible to the inhabitants of the northern hemisphere ^{*}. Some interpreters even imagine they have discovered the zodiac ⁱ in that book; an opinion not improbable, since, according to the best critics, the signs of the Scorpion and the Bull are therein described [†]. I have already observed that Job was cotemporary with Jacob ^k; from whence it follows, that, in his time, they had formed and given names to several constellations.

We are not to suppose that all the multitude of stars which every night present themselves to our eyes, were reduced into constellations in the first ages, or as soon as men became sensible of the necessity of dividing the fixed stars into different clusters. This invention, like all others, was brought to perfection by slow and insensible degrees.

There are some constellations which must have been sooner observed and named than others. Every thing inclines us to think, that the constellations which are nearest the pole, were the first which attracted the attention of the nations, whose

^z Chap. 9. v. 9. c. 38. v. 31. & 32. ^h Chap. 9. v. 9.

^{*} We may remark, from the manner in which Job speaks of commerce, that he lived in a country frequented by merchants, who imported thither the rarities of the southern regions. Newton very judiciously observes, that the conversations and connections Job might have with these merchants and navigators, might have given him his knowledge of the constellations. *Chronolog. des Egypt.* p. 229.

ⁱ Chap. 38. v. 32.

[†] See at the end of the last volume, our dissertation on the constellations spoke of by Job.

^k See at the end of this volume our dissertation on Job.

history we are now examining. These constellations never set to the inhabitants of these countries. They see them with the same facility, in all seasons of the year, and at all hours of the night. By their constantly presenting themselves to our eyes, they seem to invite, and in some sort to fix our attention. It is not the same with the constellations which compose the zodiac, or those which are but at a little distance from it. When the sun is near them, they disappear for a considerable time, and they can only be perceived and distinguished when they are at a certain distance from that luminary.

Ursa Major would certainly be the first observed of all the constellations in the northern hemisphere. There is something very striking and singular in the lustre and arrangement of the seven stars, vulgarly called *Charles's-Wain*. The savages of North America knew and distinguished the Great Bear before the arrival of the Europeans¹. This constellation is known even to the people of Greenland^m.

Arcturus is commonly the first star which appears after sun-set, whose vivid scintillations distinguish it from the twilight while it is still considerable. It is probable therefore, that Bootes, of which Arcturus is a part, was the next constellation after the Great Bear which received a particular denomination,

What we have said of Arcturus and Ursa Major, may be perfectly well applied to Orion, and Sirius, or the mouth of the Great Dog. Among the meridional stars, therefore, those which compose Orion and the great Dog, must have been the first formed into constellations. Every body knows, that Sirius, or the Dog's mouth, is the brightest of all the fixed stars; and Orion is so remarkable, that Aratus fears not to affirm, that whoever does not distinguish it at the first glance of the eye, will never distinguish any constellationⁿ.

The constellations of the zodiac are, in general, the least remarkable, both in the number and lustre of their stars, of any in this circle of the sphere. The singular arrangement of some of them however would soon attract the attention of

¹ Mœurs des sauvag. t. 2. p. 235. & 236.

^m Hist. nat. de l'Islande, t. 2. p. 222. & seq.

ⁿ Phœnom. v. 225.

astronomers: The constellation of the Bull is in this respect the most remarkable of any of those the sun seems to pass through. The Hyades, which form a kind of V consonant on the Bull's head, and especially the Pleiades, a cluster of six stars upon his shoulder, are objects very striking and distinguishable. The people of Greenland^o, and the savages of both Americas^p, had taken notice of the Pleiades; they had even engaged the attention of the Peruvians^q, who made no particular study of the fixed stars^r, though they were pretty well acquainted with the most essential parts of practical astronomy. The sign of the Bull, therefore, was probably the first of the zodiac which was reduced into a constellation. It would be formed, in all appearance, of the two asterisms already mentioned, and some neighbouring stars.

Scorpion too may be ranked among the first known signs. It includes one of the most remarkable stars of the zodiac. These also which form his tail and his talons, have a good deal of lustre, and are ranged in a singular manner around the principal star. This part of the heavens is likewise very naked.

What we have now said of the origin of the constellations, will amount, I imagine, to something more than mere conjecture, when we consider, that the Great Bear, Bootes, Orion, Canis Major, the Hyades, Pleiades, and Scorpion, are the only constellations mentioned either in the book of Job, or in Homer, or Hesiod.

There are no historical monuments to inform us, in what country this distribution of the fixed stars into constellations was invented. All the nations who applied early to the study of astronomy, as the Chaldeans, Egyptians, Chinese, &c. seem to have equal pretensions to the honour of this discovery. We may say of this discovery, as we have already said of several others, that there is no one nation that can make

^o Hist. nat. de l'Islande, t. 2. p. 222. & seq.

^p Mœurs des sauvag. t. 2. p. 235. & 236. ; N. relat. de la France equinox, p. 139. ; Mem. de l'acad. des scienc. ann. 1745. m. p. 447.

^q Hist. des Incas, t. 2. p. 36. ^r Ibid.

good its claim to it. Let us proceed to the discovery of the zodiac.

I have just now said, that, in all probability, these clusters of stars under which the sun seems to direct his course, were not the first which were reduced into constellations. We must not, however, imagine that the discovery of these asterisms which compose the zodiac, was much later than that of the other constellations. On the contrary, we have reason to think, that this discovery preceded the death of Jacob, and falls within those ages which are the subject of this first part of our work.

I have already explained the motives which might have induced mankind, in the first ages, to distinguish and give names to these asterisms, under which the sun seemed successively to direct his course, in the space of one year[†]. I may add, that this would have been extremely difficult, if the sun had been the only one of the celestial bodies which pursued that course. But the planets which attend that luminary, and tread the same path, must have contributed greatly to discover his proper direction from west to east. We shall see by and by, that the discovery of the planets belongs to the ages we are now considering; our business at present is to establish that of the zodiac. Instead of direct authorities, which are wanting, I shall propose some conjectures.

Every thing proves, that the discovery of the zodiac was very ancient in Egypt[‡]; probably within the ages we are now examining. The space of more than 700 years, from the deluge to the death of Jacob, seems to me a sufficient time, for the Egyptians to have made this discovery; for which reason I shall place it about the year 1690 before J. C. We have already seen that the Egyptians had then a year, consisting of 360 days, and that this year was divided into 12 months, of 30 days each[§]. Besides, we know that their astronomers, in the remotest ages, had divided the zodiac into twelve equal parts of thirty degrees each, distributed into twelve signs[¶].

[†] *Supra*, p. 234.

[‡] See Diod. l. i. p. 110.; Lucian. de astrolog. p. 363.; Macrobi. in somn. Scipion. l. i. c. 21. p. 107. &c.

[§] *Supra*, p. 236.

[¶] Servius ad georg. l. i. v. 33.

Now,

Now, the relation between the division of the zodiac into twelve signs, each of thirty degrees, and the division of the year into twelve months, of thirty days each, is so strong, as to render it probable, that they were both established at the same time, or at no great interval. Besides, the Egyptians must have made many observations on this subject, before they arrived at this point, of fixing the extent of each constellation which composed each sign of the zodiac precisely to 30 degrees. This must have been the result of a long chain of reasoning and constant application, to refer the course of the sun to the fixed stars. If we have reason to think that the zodiac was discovered by the Egyptians in the ages we are now upon, we have still stronger reasons to believe that it had then been discovered by the Chaldeans, who certainly had the start of the Egyptians in astronomy.

It is greatly to be wished, that the ancients had transmitted to us some clear and faithful accounts of the methods used by the first astronomers in dividing the zodiac. We find indeed, in two authors, a very singular method, which, they pretend, was originally used in making this division. The one gives the honour of the invention of this method to the Chaldeans, the other to the Egyptians ^r.

They say, that the first astronomers having made choice of some star, remarkable for its bigness and brightness, endeavoured to measure its diurnal revolution in this manner. They took two vessels of copper, the one of which had a hole in its bottom, which they could open and stop at pleasure, the other had none. They filled the first with water, and left the other empty. They placed these vessels in such a manner, that they could let the water in the one run into the other whenever they thought proper. The moment they perceived the star they had fixed upon appear above the horizon, they let the water in the upper vessel begin to run into the lower, and it continued running all that night, and all the day following, till they saw the same star appear above the horizon in the beginning of the second night. By this means they were

^r Sext. Empiric. adv. mathematic. l. 5. p. 342.; Macrobius in somn. Scipion. l. 1. c. 21. p. 107. & seq.

sure of having one entire revolution of the heavens, between the first rising of the star and its return to the horizon. The quantity of water which had run out of the one vessel into the other, would enable them, as they imagined, to measure the time of that revolution, and to divide it into twelve equal parts *.

In order to this, they divided this quantity of water into twelve equal parts. They fancied they could measure a twelfth part of a revolution of the heavens, by the time the twelfth part of the water would take in running. For this new observation, they prepared other two small vessels, each of which could contain exactly a twelfth part of the water. They began by putting the whole quantity of water which had run during the first operation, into the large vessel. They then placed one of the little vessels directly under the hole in the bottom of the larger, and the other by its side, to substitute in the place of the other small one when it was full.

Then our observators once more fixed their attention on that part of heaven where they knew the sun, moon, and planets shaped their course. They remarked the stars which arose within that space, during the time when each of the twelve parts of the water was running. They determined the extent of the signs or constellations in the path of the sun, by that star which appeared above the horizon at the moment when one of the small vessels was filled. This observation could not be made, according to Macrobius, but in two nights in different seasons †.

Such, as these authors tell us, was the method used by the first astronomers for dividing the zodiac into twelve equal parts. It is easy to see how defective and imperfect this method was. If it was ever used, it could not determine any thing with exactness, but, on the contrary, occasion the most monstrous errors.

* The number twelve was at first much used in divisions, because there is hardly any number in common use which can be divided so many ways without any remainder. For this reason, at first, they sought as much as possible equal numbers for division. Hence comes too the division of the ecliptic into 360 degrees.

† The reason of this is very plain. Without the frozen zones, there is no place where one night is 24 hours long, and consequently there is no place where they could observe an entire revolution of the firmament in one night.

Let

Let us imagine a vessel in the form of a cylinder or prism, with such a hole in the bottom of it, that the water in it should run out precisely in twenty-four hours. Let us imagine, further, this water divided into twelve equal parts. That twelfth part which run out first, would take up only one hour and about two minutes in running; whereas that twelfth part which run out last, would take up no less than six hours fifty-five minutes and forty seconds; and not so much as any one of the intermediate parts would take exactly two hours, or the twelfth part of twenty-four hours*. Besides, though we should suppose the running of the water perfectly uniform, this method would not succeed, even in the most advantageous situation, that is, under the equinoctial line; and the error would be much greater in any other position, on account of the obliquity of the ecliptic, whose horary circles divide the equator into unequal parts, though they cut it equally at the distance of fifteen degrees from each other†.

After these reflections, it would be needless to add, that an operation of this kind supposes an exact knowledge of the an-

* Sextus Empiricus, in relating this history, or rather fable, seems to be sensible that the water would run faster at the beginning, and slower towards the end of this operation. He even uses this as an argument against the justness of the conclusion from it. But he was far from imagining the error so great as it really is. For the first of these divisions would not exceed $15^{\circ} 30'$; whereas the last would exceed $103^{\circ} 59'$, according to our calculation. It is only since Guglielmini, Mariotte, and Newton, laid down the true principles of hydraulics, that we have been able to calculate the swiftness with which water runs out of vessels which empty themselves entirely. How absurd is it then in a modern author to pretend, that these men who endeavoured in good earnest to divide the zodiac by such an operation as this, were capable of correcting and setting right the error arising from the running of the water with more or less rapidity?

† Under the line, 15° of the equator which rise in one hour above the horizon, counting from the first point of the Ram or the Balance, give $16^{\circ} 23' 23'' \frac{4}{7}$ of the ecliptic, the angle of inclination $23^{\circ} 28' \frac{1}{2}$; and in two hours 30° of the equator give $33^{\circ} 1' 57'' \frac{2}{3}$ of the elevation of the same point in reference to the ecliptic.

But if we suppose the observator placed at 45° north latitude, and that he views a star at the first point of the sign of the Balance, at the intersection of the ecliptic, the equator, and the horizon, then 15° of elevation with respect to the equator, would only give $23' \frac{2}{3}$ of the ecliptic. Whereas, if the observator viewed a star placed in the horizon at the first point of the Ram, 15° elevation of the equator would give him $27^{\circ} 57' \frac{1}{2}$ of the ecliptic.

nual motion of the sun, of the position and obliquity of the ecliptic. This knowledge could only be attained by a very long course of observations and difficult operations. No author has recorded the time when this discovery was made; but we cannot reasonably refer it to the first ages, it being impossible to arrive at it without the knowledge of some theorems in geometry, much too sublime for these ages. I have related this whole history of the invention of the zodiac, only because I would omit nothing that is to be found in ancient authors, on the origin of astronomy. Sextus Empiricus himself does not seem to give much credit to his own story; and except in him, and Macrobius, who speaks of it indeed more positively, we find no traces of it in ancient writers. Ptolemy does not seem to have had any knowledge of it. Hipparchus speaks of it indeed, but only to refute it. It is better to confess our ignorance of the methods originally used in dividing the zodiac. The division of it is exceeding ancient, and this, no doubt, is one of the reasons that the traditions about it are so obscure. If this discovery had been more modern, its history would have been better known.

This would be the proper place to speak of the names originally given to the different constellations. But my inquiries into that matter have engaged me in such long disquisitions, that I think it better to throw together all I have to say on that subject, in a dissertation at the end of the second volume, than to interrupt the history of the astronomical discoveries of this period². I shall do the same with regard to the names of the planets³. These questions may be considered as a kind of digressions, which would only divert our attention from the principal object.

S E C T. II.

Of Planets.

THE discovery of the planets must soon have followed, if it did not precede that of the constellations; and it has also a great connection with the invention of the zodiac.

² See the dissertation on the names and figures of the constellations, vol. 2.

³ See the dissertation on the names of the planets, *ibid.*

As soon as men began to study the disposition and motion of the stars, they would perceive that some of them had a kind of motion peculiar to themselves, while the rest of the firmament presented always the same aspect. They would discover, that those stars which are called *planets*, answered alternately to different points of the heavens, and successively passed through different constellations. After some years observation, they would be fully convinced, that whereas the fixed stars appeared always at the same distance from each other, the position of the planets varied both among themselves, and in relation to the fixed stars. This discovery would necessarily bring them to establish a distinction between the planets and the fixed stars. They would probably not be long in giving the former a name expressive of the inequality of their motion, as they called the latter fixed *.

Some nations seem to have discovered the planets very early. The Babylonians and Egyptians, it is said, perceived the difference between their motion and that of the fixed stars in the remotest ages ^b. This, I think, is a sufficient authority for placing the discovery of the planets in that period which is the subject of the first part of our work.

The discovery of all the planets was not made at once. Such as are most remarkable for their lustre, and the inequality of their motions, would be first taken notice of, and this would lead to the discovery of others. For this reason, I am persuaded, that Venus was the first star found to be a planet, as it has both these qualities in the highest degree. Accordingly, Venus attracted the notice of the rudest nations, as we shall see by and by.

Mars was probably the second star ranked among the planets. Its lustre is commonly less striking than that of Venus, but in its perigæum it may dispute with that planet in brightness [†]. Besides, the inequality of its motions, sometimes direct and sometimes retrograde, is very remarkable. Mars, then, it is likely, was very soon put in the number of the planets.

* Planet comes from a Greek word which signifies to *wander*.

^b Diod. l. i. p. 91. 92.; Lucian. de astrolog. p. 362.; Simplicius in libr. 2. Arist. de celo, folio 117. verso.

[†] We might have seen this in September 1751.

It would not be long before Mercury was placed in this class, on account of his brightness and the celerity of his motion. Though it is not probable that Mercury was so soon distinguished from the fixed stars, as either Mars or Venus, as he is the smallest of all the planets, and almost constantly plunged in the rays of the sun, never departing from that luminary above 28 degrees. It was only for a little while, in his greatest elongation, that they could perceive and examine his motions. We find however, that Mercury was anciently known to the Babylonian and Egyptian astronomers. It is true, these nations were very happily situated for viewing that planet, both on account of the serenity of the climate, and the position of their countries, which is favourable for making observations on Mercury. For the less oblique the sphere is, it is the easier to discern that planet, disengaged from the rays of the sun.

Though Jupiter is remarkable for his bulk and brightness, yet the first astronomers would be deceived by the great length of his revolutions. As he describes a very large circle in the zodiac, and takes near twelve years to accomplish his revolution *, the great space of time which he took to pass through one sign, would make him be long confounded with the fixed stars. It required a great many observations to discover his change of place, and it would be long before he was ranked among the planets †.

These reasons which have made us imagine it would be long before Jupiter was ranked among the planets, will hold still stronger with respect to Saturn. Of all the planets, he is at the greatest distance from the sun, describes the largest circle, and takes the longest time in performing a revolution. He is near thirty years in accomplishing one revolution ‡, two years and six months in passing through one sign. The astronomers observing this star, for several years together, nearly in the same place, would long believe it to be fixed. They would be deceived by the smallness of the change in his position in

* Eleven years and 330 days.

† It may perhaps be said, that the retrogradations of Jupiter would discover him to be a planet sooner than we have supposed. They are indeed very remarkable. But I doubt whether the first astronomers observed them. They had not a sufficient degree of knowledge to take notice of these phenomena.

‡ Twenty-nine years and 150 days.

the course of one year. Besides, Saturn is a very small planet in appearance, and has very little lustre. For these reasons, I am persuaded that Saturn was the last, Mercury perhaps excepted, of the planets whose motion was discovered.

After they had made some observations on the planets, they would come to remark, that though they were continually changing their place, yet their motions were regular and periodical, and that they never strayed beyond a certain point from the equator, either to the north or south. This discovery would cause them to fix their attention particularly on that part of the heavens where these planets constantly move; and as this too is the region in which the sun performs his annual revolutions, their observations on the motion of the planets would make them also better acquainted with the course of the sun. I have made this observation before, in speaking of the origin of the zodiac^c. We may consider the discovery of the planets and their peculiar motions, as a new proof of the early arrangement of the stars into constellations. For it was only by means of the constellations, that is, by comparing the planets with the fixed stars, that they could discover the motion and course of the planets; and this we have seen was discovered by several nations in very ancient times^d.

A R T I C L E III.

Geometry.

I Have already said, that the origin of arithmetic, geometry, and mechanics, was as ancient as the division of lands, which is a sufficient evidence of their great antiquity^e. I observed also, how very rude and imperfect the arithmetic of the first ages was. This observation is equally applicable to geometry. This had its state of infancy as well as other sciences. It required a long time to bring it from its first rude beginnings into any regular system.

In the ages we are now examining, mankind was so much

^e Supra, p. 244.

^d Supra, p. 249.

^c Supra, c. 2. p. 210.

engaged in providing against their various and pressing wants, that they could not give their minds to such sublime and abstracted speculations as were necessary to bring geometry to that high degree of perfection to which it has now arrived. Such speculations require great leisure, and leisure is the fruit of plenty. Those who formed the first societies, would study geometry no further than was indispensably necessary. Let us then examine what parts of geometry were suited to their most urgent occasions, and we shall discover the true origin of this science.

Geometry is commonly divided into three parts, viz. longimetry, planimetry, and stereometry, answering to the three dimensions of extension, the measuring of which is the object of this science.

Longimetry, the first and most simple of these parts, considers only length, and consists in measuring straight lines. This branch of geometry is almost as ancient as the world itself. I might bring many proofs of this, but I shall content myself with one which appears unanswerable. The scriptures tell us, that Nimrod built several cities. I shall admit, that the buildings in these cities were very defective, both in symmetry and solidity. Let them, if you will, be deemed rather mere huts than houses: yet still it cannot be denied, that these edifices must have been large enough to lodge each one family, and high enough to admit their inhabitants without difficulty. It was necessary, therefore, to cut the pieces of wood which composed them, into such lengths as were suited to the several uses for which they were designed. It is undoubtedly for this reason, that the greatest part of long measures, as the fathom, the foot, the inch, and the cubit, which is perhaps the most ancient of all measures, have a plain reference to the ordinary length of the human body, or some of its parts.

Planimetry, or the measuring surfaces, is not by much so simple as longimetry. For though straight lines may be infinitely various as to their length, yet their nature is constantly the same, and they may be always compared with each other by superposition, in which the whole practice of longimetry consists. We may still apply a length already known and determined, to that which we have to measure. But this cannot be done
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with surfaces, the measuring of which is the object of planimetry.

The triangle and parallelogram are the simplest of superficial figures; yet we can easily imagine an infinite number of triangles and parallelograms equal to each other, which cannot be applied to, or placed upon each other; which is the natural way of determining their equality or inequality. Their relation, therefore, can only be discovered by a kind of mental superposition, and a chain of consequences, whose connection with their first principles is not seen at one view. Planimetry therefore, which comprehends surveying and levelling, was probably not invented till societies had attained a certain degree of stability and improvement. They must have had some knowledge of this before the deluge; but it is very likely that the antediluvian discoveries in geometry perished in that terrible catastrophe. All that mankind knew of this matter, in the period we are now upon, scarce deserved the name of an art. This is evident by a fact acknowledged by all antiquity. More than 1500 years after this period, very plain theorems, without which the measuring of surfaces must have been defective, were considered as the greatest efforts of the human mind *.

Planimetry owes its origin chiefly to the division of lands. As soon as political societies were formed, it was necessary to fix the extent of inheritances. This gave rise to the custom of pointing out the quantity of territory which belonged to each inhabitant of a country, by land-marks, and such signs; a custom which prevailed in the most remote antiquity†. But these signs and marks were liable to be removed or displaced by various accidents. It was necessary to contrive some method to replace them in their former position. This probably introduced some rude inaccurate practice of planimetry. These practices would be gradually improved, by the necessity there would be of dividing inheritances among a number of heirs, at the death of the possessors. The necessity of measuring of

* See Diog. Laert. in Pythag. segm. 11.

Pythagoras sacrificed an ox, when he invented the 32d prop. of book 1. of Euclid. See hist. narrat. de ortu & progressu mathes. apud Tacquet elementa geomet. Amstelod. in 12° 1683.

† See supra, p. 31.

land was so great, and the practice of it so frequent, that it would soon be much improved, and deserve the name of an art. Geometry, according to its etymology, properly signifies *the art of measuring land*. This science probably obtained this name, because land-surveying, or practical planimetry, was the first branch of that science which was reduced into an art. Longimetry is too simple to deserve the name of an art; and stereometry too complex to be cultivated and brought to perfection before planimetry.

We find nothing in ancient authors to direct us to the exact order in which the fundamental principles of measuring surfaces were discovered. We must say the same of the other branches of elementary geometry. So that on this subject we can only form some conjectures. They probably began with those surfaces which are terminated by right lines, and amongst these with the most simple. It is hard indeed to determine, which of those surfaces which are terminated by a small number of right lines, are the most simple. If we were to judge by the number of sides, the triangle has indisputably the advantage. Yet I am inclined to think, that the square was the figure which first engaged the attention of geometers. It was not till some time after this, that they began to examine even equilateral triangles, which are the most regular of all triangular figures. It is to be presumed, that they understood that rectilinear figure first, to which they afterwards compared the areas of other polygons as they discovered them. It was by this means the square became the common measure of all surfaces. For in all ages, and amongst all nations, of which we have any knowledge, the square has always been that in planimetry which the unit is in arithmetic. For though in measuring irregular rectilinear figures, we are obliged to resolve them into triangles, yet the areas of these figures are still given in square perches, fathoms, feet, and inches.

There is reason then to think, that the art of measuring squares was first discovered. This would naturally lead to the knowledge of measuring right angles, and that to the art of measuring rhombs and rhomboides. At last the method of measuring the areas of triangles would be found out. This would

would facilitate the art of measuring trapeziums, and in general all polygons, whether regular or irregular. Many of these discoveries were probably the effects of some lucky accident, rather than the result of a methodical inquiry.

Of all the theories on which the art of measuring surfaces is founded, that of angles was the latest in attaining to perfection. It is sufficient to convince us of this, to consider, that the definition which Euclid gives of an angle, at a time when elementary geometry had reached the highest point of perfection, has been found defective by very good judges in such matters*. But though we had not this proof, which appears to me conclusive, we have still another which would be almost irresistible. It is certain, that of all the quantities which are the object of geometry, the idea of none of them is so abstract and difficult to form as that of an angle. It is not a figure; it is the relation of the position of two lines, a relation which affects the senses but very faintly. In a word, it is much easier to say what an angle is not, than to determine precisely what it is.

I have now shewn, that the first generations of men could not be long unacquainted with longimetry. I have also pointed out in what manner, as I imagine, they arrived at some imperfect notions of planimetry; but these notions were by no means sufficient to the practice of stereometry. This branch of geometry, the mensuration of solids, was undoubtedly the last discovered. The geometers of the first ages, however, had probably some little knowledge of this matter, and that much sooner than we might at first imagine.

I have proved in the preceding article, that the invention of the balance was exceeding ancient. The use of this machine necessarily supposes some knowledge of the mensuration of solids. For which reason we may, I think, consider the art of using weights and balances as the occasion of the discovery of stereometry, or the mensuration of solids.

The weights of bodies are according to their solid contents; and when two bodies are composed of the same materials, the

* See la recherche de la vérité, l. 2. p. 2. c. 6. & la logiq. de Port Royal, part I. c. 12.

proportion between their weights and their magnitudes is the same. They must therefore have been able to determine the magnitudes of bodies, and their proportions, before they could make weights which were double, triple, one half, one third, &c. of that which had been taken for a common measure.

The same reasons which inclined me to think, that of all surfaces, the square was the first object of mens study, incline me to believe also, that of all solids, the cube first engaged their attention. They probably took for the common measure of weights, a cube of a certain metal, copper for example, whose side was of a known and determined length. When they weighed a quantity of any commodity, suppose double, triple, &c. of the common measure, at first they put into one of the scales, two, three, &c. cubes at once. But they would soon perceive that it would be more commodious to have weights of one piece, twice, thrice, &c. the weight of the common measure. It would not be long before they found out, that, in order to procure such, they needed only to double, triple, &c. the height of the solids which they used as weights, leaving their base the same. Chance would probably lead them to this discovery, by one or more cubes falling above another in the scale, and thereby forming a parallelopipedon double or triple the first cube. Thus the knowledge of the cube would lead to that of the parallelopipedon, as the knowledge of the square had led to that of the rectangle.

This genealogy of the first principles of the mensuration of solids might be carried further, but we have dwelt long enough in the region of probabilities. We cannot be too sparing of conjectures. Let us proceed to something more certain, and represent the few faint lights which are to be found in history on the origin and progress of geometry. Let us collect and examine the few facts which have escaped the injuries of time. This disquisition will give us an opportunity of shewing, that besides all we have already said, the practice of navigation, and the study of astronomy, contributed much to the improvement of geometry. According as the several nations were more or less addicted to navigation and astronomy, they applied themselves more or less to the cultivation of geometry.

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It is unquestionable, that, in the ages we are now upon, several nations had some tincture of geometry. The Babylonians, Egyptians, Phœnicians, &c. had undoubtedly some knowledge of the fundamental principles of this science in very early times. A few summary reflections will convince us of this. Let us begin with the Egyptians.

I have already said, that planimetry, in which levelling and land-measuring, the most necessary and useful parts of geometry, are included, owed its origin to the division of lands *. I have also shewn the necessity the first political societies were under of settling the boundaries of inheritances ^b. The Egyptians were certainly one of the nations which were first formed into a regular state. From these facts we cannot but be convinced, that they had some knowledge of the fundamental parts of geometry in the most ancient times.

I shall not indeed take upon me to fix the precise period when the Egyptians reduced land-surveying into an art. Jamblicus places this event under the reign of the gods, that is, in the most remote ages ⁱ. One thing is very certain, that land-surveying must have been soon known and practised in Egypt. We have something more than mere conjecture for this. We find the mensuration and division of lands established in Egypt before Joseph's arrival in that country. At that time every one had his own particular domain ^k. We see too from the sacred books, that, before this period, the lands belonging to the priests, had been divided from those of the other inhabitants ^l. These facts necessarily suppose the practice of land-measuring.

One discovery almost always leads to some other. The Egyptians did not confine their inquiries to these first principles of this science which necessity required, but carried their views and researches much further. The simple mensuration of lands was improved by them into the science of all kinds of

* This is confessed by the historians of all civilized nations. See Martini, *hist. de la Chin.* l. i. p. 18. 19.

^b *Supra*, b. i. art. 2. p. 31.

ⁱ *In vita Pythag.* c. 29. p. 134. edit. in 4°. 1707. See also Plato in *Phæd.* p. 1240.; *Diod.* l. i. p. 80. & 105.; *Clem. Alex. Strom.* l. i. p. 561.; *Diog. Laert.* in *Pythag. segm.* 11. p. 427.

^k *Gen.* c. 47. v. 20.

^l *Ibid.* v. 22.

proportions represented by lines. This people incessantly employed in the improvement of their country, soon observed, that the overflowings of the Nile did not of themselves extend far enough, which occasioned many lands to be uncultivated. The necessity they were under of cultivating great quantities of land, put them upon contriving methods of conducting the waters of the Nile into distant fields, which without them must have remained barren. What we said, in the article of the arts, concerning the lake Mœris, and the great number of canals made in Egypt soon after the deluge, cannot be yet forgotten^m. Works of this kind require some knowledge of the art of levelling, and even some notions of the simplest parts of stereometry.

We know further, that arithmetic and geometry were the favourite studies of the Egyptiansⁿ. These two sciences were no less useful and necessary in the affairs of life, than they were agreeable to the speculative philosophical genius of the Egyptians. Naturally quick and inventive, that people could not fail to make very rapid progress in these two branches of the mathematics.

I shall not examine at present, how far the Egyptians carried their discoveries in geometry. That disquisition will fall in more regularly in the third part of our work. It will be more proper to represent the sentiments of the ancients, concerning the manner in which geometry took its rise in Egypt. There never was, say they, any country where the art of land-surveying was so necessary as in Egypt. The yearly overflowings of the Nile must have occasioned great confusion in the boundaries of estates, taking from some, and adding to others, removing some land-marks, and covering up others. These continual changes, therefore, obliged the Egyptians to contrive some method to discover and ascertain the quantity of land belonging to each proprietor, after the retreat of the waters. They could not do this without the art of land-measuring, which, say they, gave birth to geometry in Egypt^o.

^m Supra, b. 2. p. 93. & 138.

ⁿ Diod. l. 1. p. 91.

^o Id. *ibid.*; Strabo, l. 17. p. 1136.; Proclus in Tim.; Cassiodor. var. l. 3. epist. 52. &c.

This is the opinion of the greatest part of ancient authors, adopted by all the moderns. But this opinion, though very plausible, is without any solid foundation. It is even inconsistent with that spirit of industry which the Egyptians displayed, in every thing relating to the internal order and improvement of their country.

It is not to be imagined, that the Egyptians were obliged to measure regularly every year all the lands overflowed by the Nile. A people so wise and so inventive, would certainly discover some method to fix their land-marks, so as to resist the inundations of that river. This discovery would be much easier than the most common methods of land-surveying. For which reason I have not the smallest doubt, but that the account given us of this matter by the ancients, is entirely without foundation. At present, the inhabitants of Egypt find no necessity of measuring their lands after the overflowings of the Nile; the land-marks are not disturbed, and every proprietor knows what belongs to him, as well after the inundation, as he did before ^p. In this respect Egypt was the same in ancient times, as it is at present.

If the ancients had but attended to the manner of the Nile's overflowing, they never could have fallen into the mistake I am now combating. They have not considered that that river does not rise suddenly, but swells by slow degrees, softly glides over its banks, and lays Egypt under water. This can occasion no disorder in their boundaries, it being easy to sink their land-marks so deep in the earth, as not to be discomposed by a stream which does not flow with any great rapidity.

^p Voyage de l'Egypte par Granger, *init*. It is true, this traveller adds, that the land-owners let their grounds every year to different farmers, and as these new farmers take sometimes more and sometimes less than their predecessors, it becomes necessary to measure to each of them the quantity he farms. But this admeasurement is not occasioned by the overflowings of the Nile, but by the yearly change of farmers.

They have the same custom in Japan. The whole lands are measured immediately before seed-time, and again a little before harvest, from which they make a computation of the product of each field, to prevent the farmers imposing upon their landlords. These computations, it is said, are surprisingly just. Hist. du Japon par Kœmpfer, t. 1. p. 191.

But the ancients judged too hastily of the effects of the overflowing of the Nile by those produced by other rivers in other countries. They fancied that the swellings of the Nile must produce the same devastation with other rivers when they suddenly burst their banks, and carried all before them *.

The origin which I have assigned to geometry among the Egyptians, is very natural, and sufficiently honourable to that people, viz. the wisdom and antiquity of their government. There is no occasion to have recourse to chimeras.

What I have now said of the Egyptians, may be applied to the Babylonians. Their monarchy had its origin in the remotest ages †, and they had practised agriculture from time immemorial ‡. The ancients are agreed also, that this people were among the first who studied astronomy with success §. The Babylonians, therefore, must very soon have had some ideas of geometry, and some knowledge of proportions. For how could they make any progress in astronomy without an acquaintance with certain principles of geometry? Accordingly an author, who had made antiquities very much his study, and lived when there were more monuments of them remaining than there are at present, ascribes the invention of geometry to the Babylonians, assigning only the second place to the Egyptians ¶. But however this may be, it is very certain

* Though the greatest part of the ancients have fallen into the mistake which I have rejected, there are some who have avoided it. Herodotus, whose sentiments are of great weight in every thing relating to Egypt, is of opinion that geometry was invented in Egypt on account of that tribute which Sesostris imposed on all the lands, l. 2. n. 109.

This author is certainly mistaken as to the epocha of this invention; it was of a much earlier date than the reign of Sesostris. But it must be owned that Herodotus reasons very justly, that it is impossible to levy a tax upon lands equitably without a mensuration of the quantity of their several divisions. It is much more probable that this gave rise to geometry, than the imaginary confusion occasioned by the overflowings of the Nile.

† *Supra*, b. 1. art. 3. p. 38. ‡ *Supra*, b. 2. p. 86. & 87.

§ *Supra*, l. 3. chap. 2. art. 2. p. 214.

¶ Cassiodor. var. l. 3. epist. 52.

This assertion is very inconsistent with the vain pretensions of the Egyptians. This people, who vainly boasted that they had sent colonies into all parts of the world, said that Belus conducted one into Babylon. That having fixed his residence on the banks of Euphrates, he instituted an order of

tain that the Babylonians were very early acquainted with the fundamental principles of geometry.

With respect to the Phœnicians, all authors acknowledge them to have been the first and most expert navigators of antiquity. Navigation is, unquestionably, that branch of the arts and sciences, in which mankind have displayed the greatest genius and invention. When we examine the structure of a ship, the number and variety of its parts, and when we reflect how much skill is necessary to join all these parts together in the best manner, we will be fully convinced, that the inventors of such a complicated machine must have had great knowledge in mechanics, and consequently in the first principles of geometry.

But it may perhaps be said, that the ships of these remote ages were very inconsiderable, and their construction required not much art.

I do not pretend to make any comparison between the first vessels of the Phœnicians, and our modern ships. Yet we must not imagine they were so contemptible, nor form our ideas of them from the little boats we see used at present by several nations in both continents. The long voyages which the Phœnicians undertook upon the ocean, the great quantities of merchandise with which their ships were laden^u, are quite inconsistent with such ideas. I repeat it again, that it was impossible for that people to have acquired so much skill in navigation, in the constructing and sailing of ships, by mere practice, without some system of rules and principles.

of priests after the Egyptian model. These priests were the same which were afterwards called Chaldeans, and applied to the study of astronomy, in imitation of the Egyptians. So it was from Egypt, say they, that they derived all their learning. Diod. l. 1. p. 32. & 92.

But this fable invented by the vanity of the Egyptians, could have been believed by none but the Greeks, who were absolutely ignorant of the true history of the people of Asia. See Perizon, origin. Babyl. c. 5.; Stanley, hist. philos. Chald. &c.

^u See *infra*, b. 4. chap. 2.

ARTICLE IV.

Mechanics.

NO branch of the mathematics was sooner studied and practised than mechanics. Navigation, architecture, and every other art designed for the supply of all our various wants, require the assistance of mechanics. For which reason they are denominated the mechanic arts.

Notwithstanding this, mechanics was probably the last branch of the mathematics which was reduced into a regular system. In this respect it is much more modern than geometry. It might seem, therefore, superfluous to speak of this at present as a science, which we have already considered as an art. But as the use of weights and measures, which we are certain was known in the days of Abraham, necessarily supposes the use of the balance, and as the balance is a kind of machine which requires the knowledge of the first principles of the equilibrium, we cannot say that the theory of mechanics was altogether unknown in the ages we are now examining.

I readily confess, that this theory was most imperfect, and, in general, that the progress of mechanics considered as a science was extremely slow. I shall not attempt to trace it step by step, but content myself with pointing out the way in which I imagine the balance was invented.

The first men were daily under the necessity of cutting wood. Before the invention of wheel-carriages, or the use of beasts of burden, they were obliged to carry the timber they had cut upon their shoulders. They would soon observe, that the position of the pieces of timber which they carried, was not a matter of indifference, but fatigued them more or less according as the part which rested upon the shoulder was more or less distant from the extremities. As these pieces would frequently be nearly of an uniform thickness, they would in time discover that they carried them with the greatest ease, when
they

they supported them by the middle. In this position, their load would, if we may so speak, maintain itself *. From this they would quickly discover, that a body of an uniform thickness remained in a state of rest, when supported or suspended by the middle of its length; but that in every other position the longest end preponderated. By natural consequence, they would find out, that when the middle was the sustaining point, if any new weight was added to either end, it would destroy the equilibrium. This was enough to suggest the idea of the common balance. The invention of fitting scales to each end, probably came from the custom of carrying large bundles at the extremities of a stick over the shoulder, to prevent their embarrassing the free movement of the limbs †.

When I say that the balance was known in the ages we are now upon, I mean only the common balance. I am far from thinking they had any idea of the steelyard, or such like machines. I will not even affirm, that the balance of the first ages was like ours composed of a beam, of a needle with two cheeks, and of two scales. Perhaps their balance was no more than a beam suspended by the middle, at one end of which they hung the weights, and at the other the goods which were to be weighed. Nay, perhaps, they contented themselves with placing a board in equilibrium on the common centre of its length and thickness, and then placing on one side the weights, and on the other the goods to be weighed, at equal distances from that common centre. All that we know with certainty, is, that in Abraham's time they had balances *. We are at liberty to suppose them as simple in their mechanism as we please.

I might speak of several other machines which must have been invented in the remotest ages. The lever and the wedge, must have been in use from the very commencement of society. Without these they could not have per-

* In this manner, we see our watermen, every day, carrying oars of a great length and thickness, in equilibrium, without being obliged to hold them with their hands.

† We daily see country-people carrying large bundles at the end of a stick over their shoulders in this manner.

* Gen. c. 23. v. 16.

formed several works, such as the tower of Babel, for example, which we know were executed in the ages we are now considering.

We must rank also different kinds of machines for transporting great weights, among the first mechanical inventions. The sledge must have been the first invented. They would next contrive to lay their weights on rollers; an invention which nature herself indicates, and which has been used in the remotest ages. They would next reflect, that if they could join the sledge to the rollers, without impeding their turning round, it would much lessen their labour. By these steps they came at last to the discovery of wheels; and thus the sledge gradually rose from the ground into machines, with two or four wheels. This last discovery may be traced up very high. Chariots were known in several countries, in very ancient times. They were common in Egypt in the days of Jacob ¹. I may observe further, that, according to all appearance, their wheels in these first ages were not composed of fillies and spokes, but of one solid piece, as the wheels of carriages in Japan are at present ².

Besides, the make and use of the machines which I have mentioned, were not, in the first ages, directed by any theory. Mechanics had then no other guide, but random trials, and the beaten path of practice. We shall see reason to be of this opinion, as we come to fix the time of each invention in the course of this work.

There is no necessity, I imagine, to enlarge any further on the origin and progress of mechanics, considered as a science. If any one, taking this term in a more extensive sense, desires further light into this subject, he may find satisfaction, in what we have said in the article of the arts. He may also, from the plan which I have laid down, amuse himself with drawing such consequences from each particular invention, as may seem to him most simple and natural.

¹ Gen. c. 41. v. 43. c. 45. v. 19.

² Kœmpfer, hist. du Japon, t. 3. p. 218.

ARTICLE V.

Geography.

GEOGRAPHY is, properly, the art of determining the reciprocal distances of different places on the terrestrial globe, their situation with respect to one another, and their position with respect to certain imaginary points in the heavens. This determination cannot be made with exactness and precision, without the help of astronomy and geometry, and the continual use of such operations as are founded on these sciences. We have just been shewing the great imperfection of the mathematics in the ages we are now examining, and therefore we cannot entertain a very high idea of the geography of the men of these times. We cannot, however, deny them some slender hints and confused notions of this science. We have before given the name of arithmetic to certain notions about the nature and calculation of numbers, which may rather be regarded as the effect of a kind of instinct, than the fruit of reasoning and reflection. I think we may venture, therefore, to give the name of geography to the methods practised, in the first ages, for discovering and determining the distance and relative position of certain places. Some such methods were so extremely necessary, and men were obliged to study and search for them with so much earnestness, that they could not long remain undiscovered.

I have said, in the first book, that the dispersion of families was the immediate consequence of the confusion of tongues. The first colonies which were formed, probably wandered from place to place, till they found a convenient spot to settle in. Such countries as furnished spontaneously the greatest quantities of the necessaries of life, would be first inhabited. But each climate contains but a few of these fertile happy spots. They are commonly separated from one

another, by a great extent of dry and barren soil. It would be long before these intermediate wastes were inhabited. The first colonies, of consequence, would remain separated and at a distance from one another for some time. The great difficulty of finding their way through these uncultivated deserts, would deter the first men from wandering far from their habitations. But as soon as societies were become numerous, several motives would determine men to undertake more distant journeys. There were then no beaten roads. The fear of losing themselves would put them upon contriving some methods of finding their way back into their own country in case of need.

It is probable they would first take particular notice of the obstacles they met with, such as marshes, rivers, mountains, precipices, and impenetrable forests. They would remark also valleys, hills, lakes, meadows, rocks, in a word, every thing that sensibly struck their eyes, and might serve as a mark to distinguish one country from another. The first travellers would contrive certain marks to know and discover the roads they were to take, as well as the obstacles they were to meet with. It would be sufficient for this purpose to set up stones or stakes at certain distances, or to make marks on the barks of trees, as the savages do at present ^a. The use of such marks was probably the first thing that gave men any ideas of the relative position of different districts. Add to this, the observations which they might make on the course of the sun, respecting the pointing and direction of their roads.

The first travellers, we may be sure, would also take particular notice of the number of days they took in travelling from one district to another. Nothing more frequent in the sacred books than this expression, *Such a city is so many days journey from such another city* ^b. It is in this manner several nations still compute the distance of one coun-

^a See le voyage du Baron de la Hontan, t. I. p. 223; Mœurs des sauvag. t. 2. p. 240. ; Voyage de Dampier, t. 4. p. 244.

^b Gen. c. 30. v. 36. Num. c. 11. v. 31. &c.

In Cæsar's time the Germans computed distances by days journeys. *De bello Gall.* l. 6. c. 23.

try from another. This observation of the number of days which travellers took to pass from one place to another, was the first, and for a long time the only measure of distance between the several parts of our globe.

These beginnings of geography then were nothing more than a kind of imperfect guess at the distances and respective situations of certain countries. To this all their inquiries on this subject were probably confined for some ages. But as soon as these distinct societies became populous, and opened a frequent intercourse with one another, these first discoveries would be rendered more perfect, and new ones would be made. Then highways began to be formed, which must have contributed very much to the improvement of geography. Besides, how could men direct their course through a great extent of country, without some imperfect knowledge, at least, of the position of places, with respect to the principal points of the horizon? The observation of these points was still more necessary, when they traversed the extensive deserts which in the first ages often divided one nation from another. It is even difficult to conceive how these journeys could be frequently repeated, without some rude kind of delineation or painting of the position of the several countries through which they were to pass ^c. The first journey from one country to another was probably the effect of chance, but subsequent ones would be the fruit of reflection. I am persuaded, therefore, that, for the benefit of commerce, some method of preserving and delineating on some durable materials, the observations which travellers had made on roads and distances, was very soon found out. The contrivances of the savages of America may enable us to form some idea of those of ancient times. These people have the art of drawing on skins or barks of trees, a kind of geographical maps, more exact than we can well imagine ^d. These they preserve in their public repositories, and have recourse to them when they have occasion ^e.

^c L'Escarbot, hist. de la N. France, p. 371; N. relat. de la Gaspésie, p. 155; Hist. gen. des voyag. t. 3. p. 104. & 417. t. 2. p. 499.

^d Voyage de la Hontan, t. 1. p. 223. t. 2. p. 106. & 107; N. relat. de la Gaspésie, p. 153.; Mœurs des sauvag. t. 1. p. 225.

^e Ibid.

The first maps, if we may give them that name, must have been very imperfect. How could the first geographical productions of mankind be just or exact, when they scarce had any idea of the most essential operations of geometry and astronomy? Besides, it is certain that they were quite ignorant of the sphericity of the earth, judging of its figure by its appearance. Not being able to carry the discoveries of their reason beyond the informations of their eyes, they believed our globe to be a plain of an immense extent. They could not therefore have the smallest notion of *projection*, which is one of the principal branches of the art of drawing geographical charts or maps. These discoveries were reserved for ages greatly posterior to those we are now considering. In process of time, geometry and astronomy administered these helps to geography, without which it must have remained in its primitive state of imperfection: though it must be owned, that these two sciences were indebted for a great part of their progress, to the great necessity men were under of cultivating and improving geography.

There are many other arguments, besides all we have yet said, to prove the great antiquity of geography. In the ages we are now examining, there had been conquests, there had been divisions of territories among the children of the princes who governed them. There had been also long voyages and journeys by sea and land.

The ancient traditions concerning the travels and conquests of Bacchus and Osiris, the expeditions of Ninus and Semiramis, the great extent of the empire formed in Europe, Africa, and some parts of Asia, by the Titans, are so many proofs of the knowledge which mankind had of geography in the first ages. Next to travelling, we may consider war as one of the strongest motives to the study of the situation and other circumstances of different countries. Without some knowledge of this science, it is difficult, if not impossible, to incamp, to march, and to subsist an army. It is true, that for the first time they must have advanced at random. But the desire of securing a retreat, in case of a repulse, the necessity of staying longer in a country than they had designed,
the

the ambition of succeeding in an enterprise, which had formerly miscarried for want of a proper knowledge of the country, would put them upon making observations for their future direction, and profiting by their first discoveries. The experience of what had happened, would contribute very much to the invention of the art of delineating the respective situations of the countries which they had traversed.

We know, likewise, that it was a common practice in the primitive times, that when a monarch, at his death, left several sons, the provinces which composed his empire, were divided amongst them. What is more famous in history than the division of the world between Jupiter, Neptune, and Pluto? These remote events are indeed much involved in fables, but we may still discern in them the vestiges of the customs of the most ancient ages. But how was it possible to make such partitions with any kind of equality, without some knowledge of the number, extent, quality, and situation of the provinces of which an empire was composed? The limits of each province must then have been known and settled. This supposes some sort of geography.

Navigation must also have contributed very much to the origin and progress of this science. The migrations of some families from Asia and Egypt into Europe, are exceeding ancient. Several colonies from these countries had settled in Greece before the death of Jacob ^f.

These maritime enterprises are a clear proof of the early attention of mankind to the situation and distances of countries. The first navigators, no doubt, abandoned themselves very much to chance. But it is highly probable, that mankind would take all possible pains to inform themselves as soon as they could, of the distance and situation of the countries to which they designed to sail. After some time, they would come to know the course which they were to steer, in order to arrive in one country rather than in another, the time that would be necessary to perform their voyage, and consequently would conduct their ship by this knowledge.

^f See *supra*, b. i. art. 5. p. 64. & 67.

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Though, in these first ages, they kept as near the coasts as possible, yet they must sometimes have lost sight of land, and been drove off to sea. We see indeed in the relations of the ancients, that when a ship was driven from her course by storms, the crew were almost always ignorant of the coast on which they were cast. Accordingly, I do not pretend that mariners were then acquainted with the whole extent of the ocean and its coasts, as they are at present. But still we may affirm, with truth, that, excepting in these unexpected cases, mariners had then a general knowledge of the countries to which they designed to sail.

In speaking of the improvements in geography, occasioned by military expeditions, the partition of empires, and navigation, I have mentioned the greatest part of the historical facts which prove the antiquity of this science. There are still some however yet unnoted, which may perhaps appear even more conclusive than those we have already mentioned.

Among the several sciences which the Egyptians pretended to have invented, they did not forget geography. According to their ancient traditions, it was Hermes or Mercury who taught them the first principles of this science. In the catalogue which Clement of Alexandria has given us of the writings of Hermes, there were ten books which were said to be the particular study of the chief priest. The subjects of these books were, cosmography, geography, the first elements of astronomy, the chorography of Egypt, and the description of the course of the Nile ^a. It is true, if we had no other authority but these books of Mercury, to prove that the Egyptians had some knowledge of geography in the most remote times, I should not look upon this fact as very well attested. But I think we may discern evidences of this science, in the relation which Moses gives us of the conduct of Joseph, when Pharaoh had constituted him his prime minister. The sacred historian represents this patriarch visiting all the different provinces of Egypt ^b. His design was to examine their condi-

^a Strom. l. 6. p. 755.

^b Gen. c. 41. v. 46.

tion, and take proper measures to secure them against the fatal consequences of the seven years of barrenness. This fact inclines me to think, that the Egyptians had very soon found out some method of determining the situation and relative position of the different districts of their empire, without which it could not have been divided into a certain number of provinces or departments in the days of Joseph ⁱ.

The sacred books afford us a still more direct evidence of the great antiquity of this science, in the description of the terrestrial paradise. When we examine with attention the manner in which Moses speaks of this abode of the first man, we discern plainly in it all the peculiar characteristics of a geographical description. He says, that this garden was situated in the country of Eden, towards the east; that a river went out of Eden, and then divided into four branches. He describes the course of each of these four branches, and names the countries which they watered. Nay, he does more; he enters into a long enumeration of the various productions of each of these countries. He even describes them in a very particular manner. The sacred historian does not content himself with saying that the country of Havilah produced gold; he adds, that the gold of that country was exceeding fine. There too, says he, is bdellium, and the onyx-stone ^k. Such circumstantial descriptions prove, that geography had made considerable progress before the days of Moses.

We might draw very conclusive proofs of this from the travels of Abraham, Isaac, and Jacob. Nothing can be more distinct than the description of the situation and names of the different cities and countries which these patriarchs visited. Moses could not have given this exact account of the topography of so many countries, unless care had been taken, in the remotest ages, to make observations on the distance, situation, and nature of the different countries which had been

ⁱ Gen. c. 41. v. 57.

^k Ibid. c. 2. v. 10. & seq.

The bdellium is a gum which distils from a tree very common in Arabia and several parts of the east. Pliny speaks fully of it, l. 12. c. 19.

discovered.

discovered. Consequently some of the simplest operations of geography were invented in these ancient times.

What we have here said of the state of this science, may suffice at present. Nor can we expect much greater light into this matter. The history of the ages we are now examining, is not so thoroughly known, as to enable us to trace the progress of geography step by step. We know only enough to convince us, that several nations, in these distant ages, were not quite strangers to the first elements of this most useful and necessary science.

A R T I C L E VI.

Reflections upon the origin and progress of sciences in Asia and Egypt.

WE see from all that has been said, that the origin of the sciences may be traced up to the ages very near the deluge, in Egypt, and in several parts of Asia. It would be superfluous to produce any further proof of this. But it may not be improper to examine why these nations I have mentioned, were the first who distinguished themselves by their discoveries.

The sciences could not prosper, but in proportion to the progress of the arts. Men would labour to procure the necessities of life, before they thought of its ornaments and superfluities. We may compare the men of the first ages, after the confusion of tongues and dispersion of families, to the savage nations of the present age. Like them they formed societies, but these societies were far from being numerous. Yet nothing but the great number of citizens in a state can occasion the flourishing of the arts and sciences. Accordingly we see, that, in all ages, it was great empires only which enjoyed this advantage. In these great states, the perfection of the arts, and especially of agriculture, procured that leisure to a considerable number of men, which is so necessary

to study and speculation. These men, relieved of all thought and care about the necessities of life, found their minds at liberty to take a nobler flight, and exert all the force of their genius in the cultivation of the arts and sciences. Hence it was that some nations made greater and more rapid progress than others, which were not so well civilized.

The Babylonians, Assyrians, and Egyptians, had the advantage of being formed into regular well-constituted states, before any other ancient nations. They were consequently sooner civilized, and applied themselves to the cultivation of the arts and sciences. Their progress in these studies would be the more rapid, as these empires were not, as far as we know, disturbed by any wars or tumults. It is certain, that the Egyptian monarchy, in particular, enjoyed the most profound tranquillity from the beginning ¹.

Babylonia, Assyria, and Egypt, by this means, would soon become very populous. A populous and well-governed state must soon acquire plenty. This plenty and tranquillity which the Babylonians, Assyrians, and Egyptians enjoyed in the first ages after the flood, set their minds at ease to pursue their studies, and even engage in the most abstract inquiries. In each of these empires there were great numbers of citizens who found themselves exempted from all the laborious depressing offices of life. This ease and leisure enabled some of them to devote their whole lives to study. This is a reflection which has not escaped the best writers of antiquity; Aristotle, inquiring into the native country of the sciences, declares that they must have had their origin in those countries where the inhabitants enjoyed great leisure. This is the reason which he gives for the great progress the Egyptians had made in mathematics. In that country, says he, the priests applied themselves wholly to study ^m.

The

¹ Strabo, l. 17. p. 1174.

^m Metaphys. l. 1. c. 1. p. 240.

The priests in Egypt were the sole depositaries of their history and sciences.

The same reasons will hold good with respect to the Babylonians. Among that people, the Chaldeans formed a body distinct from the rest of the citizens ^a. Their way of life very much resembled that of the Egyptian priests. Study was their only business, The laws exempted them from every other function ^o. Such institutions could not but contribute greatly to the improvement of human knowledge. But such institutions could only take place in great and populous states, which could allow a considerable number of their citizens to enjoy that repose and leisure so necessary to the study of the arts and sciences.

The Phœnicians are an exception to this general rule. Though a small nation, they were very soon illustrious for their knowledge and their discoveries. The occasion of the uncommon excellence of this people in the sciences, was their peculiar turn and early inclination to commerce and navigation ^p. To succeed in this, various branches of knowledge, such as arithmetic, astronomy, geography, geometry, and mechanics, were absolutely necessary. For which reason, though it was not possible that any considerable number of the Phœnicians could enjoy such a degree of leisure, as to give themselves entirely up to the study of the abstracted sciences; yet the whole state being engaged in a way of life which required the knowledge of these sciences, every individual would contribute something to their improvement.

It is not difficult, therefore, to discover why the sciences had their origin in those countries which were first civilized. History confirms the reasons we have given for this. In the ages we are now considering, we meet with science and learning only in Egypt, and some parts of Asia. For the same reason also, the European nations have furnished us no materials for this part of our work. It was much later before these countries were well peopled, before their inhabitants were ci-

ces. When Herodotus, Plato, Diodorus, relate any fact, they always tell us they received it from the mouth of the priests.

^a Strabo, l. 16. p. 1090.

^o Diod. l. 2. p. 142.

^p See *infra*, b. 4. c. 2.

vilized,

vilized, and formed into regular states and kingdoms. Besides, the first inhabitants of Europe seem to have had less genius for discovery and invention than the eastern nations. They knew nothing of arts or sciences till after the arrival of colonies among them from Asia and Egypt. It is for this reason that the history of Europe is almost quite barren, till the arrival of these colonies.

We may, however, observe that the progress of the arts and sciences in the first ages was exceeding slow, even among those nations who pursued them with the greatest constancy and keenness. The tedious imperfect methods they had of recording their thoughts, must have formed a very great obstacle to the improvement of human knowledge. For many ages mankind knew no better ways of writing than painting and hieroglyphics¹. Both these ways of writing are extremely defective. They are capable only of representing sensible objects. Symbols are quite unfit for communicating, with precision, abstract ideas. For which reason, mathematics in particular could make but little progress, till after the invention of alphabetical writing.

This invention has, no doubt, contributed infinitely to the perfection and progress of the sciences. Yet at first its utility must have been inconsiderable. It is only by communicating their ideas that men can improve their discoveries. But the mere invention of letters was not sufficient for this purpose. They wanted some kind of matter, flexible, and easily transported, on which they might write long discourses with ease and expedition. This was not discovered till long after. Marble, stone, brick, metals, wood, &c. were at first used for writing, or rather engraving upon². When so much time was necessary to write a few sentences, it could not be expected that the sciences should make a very rapid progress. Besides, these kind of books could not be transported from

¹ See *supra*, b. 2. chap. 6.

² See *supra*, b. 2. chap. 6. p. 187. & 188.

place to place, but with great difficulty. Accordingly we find that the sciences remained in a state of great imperfection among all the ancient nations, of which we shall find more than sufficient proof in the course of this work. Human knowledge has made greater progress within these last hundred years, than in all antiquity; which is chiefly owing to the expeditious and easy methods we have of communicating and publishing all our discoveries.

B O O K

B O O K IV.

Of Commerce and Navigation.

IT is unnecessary to display the great importance of commerce, or enumerate the advantages which mankind have in all ages derived from it. Every one knows, that it is the soul and support of states; the chain which unites all nations and climates. To produce all these advantages, it was necessary to open a communication between the several parts of this terraqueous globe, by inventing the art of traversing the seas which separate one part of it from another. Commerce, therefore, is indebted to navigation for its greatest success, and navigation is reciprocally indebted to commerce for all its improvements and discoveries. These two objects mutually support each other. They are always seen to flourish or to fall together. They cannot, therefore, be well considered separately. Yet, as it was commerce that gave birth to navigation as an art, it will be proper to begin with commerce.

C H A P. I.

Of Commerce.

THE origin of commerce is almost as ancient as that of societies. The inequality with which the productions of nature are distributed in each country, gave occasion to traffic among mankind. Commerce begun by exchanges between particular persons, and by slow degrees it spread from village to

to village, city to city, province to province, kingdom to kingdom, till at last it comprehended and united the whole world. Necessity was the parent of commerce. The desire of procuring conveniencies, nourished and gave it strength. Covetousness, luxury, and, above all, a taste for superfluities, brought it at length to the highest perfection.

Agriculture and industry are the foundations of commerce. In the first ages, when the greatest part of mankind were ignorant of the most necessary arts, and led a life but little different from that of beasts, traffic and commerce were quite unknown. Modern travellers have met with nations who are still in this deplorable condition ^a. Families being by insensible degrees reunited, these infant societies were chiefly taken up in providing the necessary means of their subsistence. From thence a certain intercourse and communication must have commenced among the inhabitants of the same country. Such unquestionably was the first origin of commerce.

Commerce consisted at first in the exchange of those things which are most necessary to human life. One who had killed a great many beasts in hunting, exchanged their flesh and skins, for the honey and fruits which his neighbour had gathered in the woods. The husbandman exchanged a part of his grain, for wine and oil, &c. Several nations on the coasts of Africa, all the savages of America, and some of the people of Asia, still retain this primitive practice, of giving their superfluities for those things which they want, or which they have not in sufficient quantity. Commerce is carried on by all these nations at present, as it was in the primitive ages, that is, by exchange.

Originally they had no settled rule for appretiating their commodities. Opinion alone determined their value and their price. They judged by the eye of the quantity, weight, and bulk of the goods they had a mind to exchange. This was the only way of traffic known in the island of Formosa, when the Dutch first discovered it ^b. It is still practised in several coun-

^a Recueil des voyages qui ont servi à l'établissement de la compagnie des Indes Holland. t. 4. p. 586.

^b Rep. des lettr. t. 33. p. 523.

tries. Gold is to this day the principal merchandise of Ethiopia. The greatest trade in it is carried on at Sofala. This trade is not managed by weights and measures, but only by the estimation of the eye ^c. It is the same in some parts of the East Indies ^d.

In proportion as societies were polished, the objects of commerce were multiplied and diversified. The wants of nature gave birth to the most necessary arts. These were soon followed by the arts administering to luxury and superfluity. New wants were invented, as soon as new arts were discovered; and mankind cherished new tastes and inclinations, when they had found out the means of gratifying them. In consequence of this, commerce was extended and increased. It then became necessary to find out some more certain method of judging of the value of commodities, than by the eye.

I have shown in the article of geometry, how the first attempts in architecture produced the several measures of length, and that these measures, for the most part, bore a relation to the size of the human body, or some of its parts ^e. It was easy to apply these measures to determine the bulk of the greatest part of solid bodies. Thus mensuration by fathoms, ells, &c. was very early practised. It was, no doubt, more difficult, and required more reflection, to discover the method of measuring liquids. It could not, however, be very hard to find out, that they might determine the quantity of grain or liquids, by forming vessels of certain dimensions, according to the lineal measures already known.

The primitive traders had nothing now to do, but to find out some method to set a value upon metals and some other bodies which could not well be subjected to lineal or liquid measures. The discovery of weights and balances must have cost a greater expense of thought, than those measures we have mentioned. The relation between the weight of a body and its solid contents, is not quite so obvious, as the application of lineal measures, or the equality of the dimensions of

^c Huet, hist. du commerce, p. 60.

^d Voyage de Dampier, t. 2. p. 111.

^e *Supra*, b. 3. chap. 2. art. 3. p. 252.

a vessel, and of the quantity of liquids it can contain. Besides, supposing this relation already known, it required much consideration and many trials to invent instruments proper for weighing bodies. Yet we see that the invention of the balance was extremely ancient, since we find it was known in the days of Abraham ^f. I have proposed, in the preceding book, some conjectures concerning the invention of that machine, to which I have nothing to add at present ^g. I shall only observe, that stones, as far as we can judge, were the first bodies used as weights ^h.

The invention of weights and measures would necessarily introduce great changes into the way of trade, and contribute greatly to its improvement. Men would soon discover the inconveniencies of trading only by exchange. On a thousand occasions they would find it impossible, to give exactly an equal value of one kind of goods for another which they had a mind to purchase; as it is seldom one thing is precisely of an equal value with another. Besides, it would often happen, that the buyer had not that particular kind of goods which the seller wanted in exchange for his. We may add further, that several kinds of merchandise could not be divided without being destroyed, or at least very much diminished in their value. It was found necessary, therefore, in order to facilitate these exchanges, to introduce into trade, certain things of an arbitrary, but fixed and known value, which might represent all kinds of merchandise, and serve as a common price to all the objects of commerce. The situation of the different nations of the world determined their choice of the materials originally used for this purpose. In several countries, pieces of a particular kind of wood ⁱ, shells of a certain species ^k, grains of salt ^l, fruits ^m, &c. have been, and still are used as the common signs and prices of all commodities. This

^f Gen. c. 23. v. 16. ^g Chap. 2. art. 3.

^h See le P. Calmet, t. 2. p. 829. & 830. t. 3. p. 771.

ⁱ Hist. gen. des voyag. t. 5. p. 31.

^k Rec. des voyag. de la compagnie des Ind. Holland. t. 4. p. 305.

^l Bibl. raisonnée, t. 1. p. 58.; Lettr. édif. t. 4. p. 78. 79.

^m Acoſta, hiſt. nat. des Indes Occident. l. 4. c. 3. fol. 132. *verso*.; Tavernier, t. 3. p. 21. t. 4. p. 337.; Hist. gen. des voyag. t. 3. p. 324.

was probably the practice of the primitive ages ⁿ. But these kinds of money could be current only each in its particular country, none of them could become universal.

Civilized nations would soon be sensible of the inconvenience of these kinds of common signs and prices. The moment metals were discovered, it would be perceived that they were the most commodious materials in nature for these purposes in commerce. Metals are found almost in all climates. Their hardness and solidity preserve them from many accidents, to which the other kinds of money I have mentioned are liable. They may be divided too into as many parts as it is thought proper, without any diminution of their real value. Metals, therefore, were very soon established by the unanimous consent of all nations, as the representative signs of the value of all the objects of commerce.

We cannot fix the precise time when metals began to be the common price of all kinds of merchandise. It appears, that, in some countries, this institution was exceeding ancient. Egypt was probably one of the countries where this kind of traffic was first used. We have seen above, in the article of metallurgy, that the discovery and fabrication of metals was of great antiquity among this people ^o. It has been remarked, that there is no mention in scripture of gold and silver as riches, before Abraham's journey into Egypt, but only after his return. Moses observes, that this patriarch returned from Egypt exceeding rich in gold and silver ^p. With respect to Asia, we see Abimelech, King of Gerar in Palestine, gave a thousand pieces of silver to Abraham, for his taking of Sarah from him ^q. In a word, after that period, there is frequent mention in Genesis of payments made in silver ^r. It is certain, then, that this kind of commerce prevailed in Egypt and Asia in very ancient times.

When metals were first introduced into commerce, their value was determined only by their weight. The buyer and

ⁿ See Cedren. p. 148. ; Suidas, voce Ἀσκήσια, t. i. p. 347.

^o B. 2. chap. 4. p. 149.

^p Gen. c. 13. v. 2.

^q Gen. c. 20. v. 16.

^r Chap. 23. v. 16.

feller agreed about the quality and quantity of the metal to be given for the goods. The buyer delivered the quantity of metal agreed on by weight [†]. The scriptures present us with a remarkable example of this ancient way of buying and selling. We there read, that Abraham gave 400 shekels of silver for a cave, to be a sepulchre for himself and his family. Moses observes, that he weighed this sum before all the people [†]. It was the weight, therefore, which then determined the quantity of metal to be given as the price of any purchase. It appears, however, that they paid some regard to the purity and fineness of the metal; for the sacred writer observes, that the silver which Abraham gave was of the best kind, such as was every where current [‡].

These primitive practices still subsist in several countries. In China gold and silver are not current as money, but only as merchandise. Accordingly, when they use these metals in payments, it is the custom to cut them into pieces in proportion to the price of the goods they have purchased. They then weigh each piece of the metal to ascertain its value [×]. It is the same in Abyssinia ^γ and Tonquin ^z.

This method of weighing the quantity of metal in every payment made in gold and silver, must have been very troublesome and inconvenient. It was easy to remedy this inconvenience. Nothing more was necessary than for each nation to fix a mark and impression upon each piece of metal, signifying and ascertaining its weight and fineness. It was proper likewise to agree on certain names to express each of these portions of metal, designed for the representative signs of all kinds of merchandise. Such was the origin of money. But it is very difficult, if not impossible, to fix the time of this invention. If we believe some writers, it belongs to very remote ages. They tell us, that the Assyrians were the first

[†] Arist. polit. l. 1. c. 9. p. 305 E. See also Plin. l. 33. sect. 13. p. 610.

[‡] Gen. c. 23. v. 16.

[§] Ibid.

[×] Martini, hist. de la Chine, l. 8. t. 2. p. 259.; Lettr. édif. t. 19. p. 432.; Rec. des voyag. au Nord, t. 8. p. 363.; Rec. des voyages de la compagnie des Indes Holland. t. 1. p. 364. & 442.

^γ Ibid. t. 4. p. 32.

^z Tavernier, t. 3. p. 221.

who struck money, some time before the birth of Abraham ^a. According to Herodotus, it was the Lydians ^b; and it appears that this art was very ancient among that people ^c. Other writers place the origin of money in the times when Saturn and Jupiter reigned in Italy ^d. Some give the honour of this invention to a King of Thessaly, named *Ithonus* ^e, said to be the son of Deucalion ^f. The annals of China relate, that in the reign of Hoang-ti, that is, near 2000 years before J. C. they struck copper money for the convenience of commerce ^g. We read too in Diodorus, that in Egypt they cut off both the hands of such as were convicted of making false money ^h. But as that author does not fix any date to the several regulations he mentions, we can determine nothing, from what he says, concerning the period when they first coined money in Egypt.

As to the sacred writings, we find some passages in Genesis, which seem to indicate, that another method of fixing a certain value upon pieces of metal, besides that of weighing them, was very anciently known in these countries. Moses says, that Abimelech gave Abraham 1000 pieces of silver ⁱ. Joseph was sold by his brethren to the Midianitish merchants for twenty pieces of silver ^k. It is said also, that this patriarch made a present to Benjamin of 300 pieces of silver ^l. In all these passages there is no mention of the weight of silver, but only of the number of pieces. What is more, we read, that Jacob bought a field from the children of Hainor for an hundred *Kesitah* ^m. Interpreters are much divided about the meaning of this word. In general, however, they are of opinion that this passage speaks of a certain sum of silver.

^a Mem. de Trev. Mai 1704, p. 787.

^b L. I. n. 94.

^c See la bibl. chois. t. II. p. 13.

^d Ovid. Fastor. l. I. v. 239.; Draco Corcyraus *apud* Athen. l. 15. c. 13. p. 692.; Macrob. Saturn. l. I. c. 7. p. 217.; Isidor. orig. l. 16. c. 17.

Several critics are of opinion, that the Janus of the ancients is the same with Javan the son of Japhet, mentioned Gen. c. 10. v. 2.

^e Lucan. Pharsal. l. 6. v. 402. &c.

^f Otho Sperling. de numm. *non cussis*, p. 13.

^g Martini, hist. de la Chine, l. I. p. 42.

^h L. I. p. 89. ⁱ Gen. c. 20. v. 16.

^k Ibid. c. 37. v. 28. ^l Ibid. c. 45. v. 22.

^m Ibid. c. 33. v. 19.

But had that silver any impression upon it? in a word, were those pieces which Moses speaks of, pieces of coined money? The difficulty consists in determining this. The greatest number of commentators maintain, that this word, *Kesitah*, signifies a piece of money with the impression of a lamb^a upon it. This opinion appears to me the more probable, as we know very well that the figures of animals were the first impressions upon the money of the ancient nations^o. I am persuaded, therefore, that the art of impressing certain marks upon pieces of metal, to point out and ascertain their value, was known and practised in some countries in the days of Jacob; in some countries, I say, for I am far from thinking that the use of such money was very general.

Besides, it does not seem to me, that the invention of this first species of money required either much labour or much sagacity. This first money was either simply cast in moulds, or, at most, struck with the hammer. It may be compared to that of Japan and several eastern nations. This is a kind of ingots of gold or silver, very coarsely formed. They strike a mark upon them with the hammer, expressing their standard, and their weight^p. The fabrication of such pieces of money, required neither much care nor much skill. I imagine, likewise, that originally these pieces of money were current only in the country where they were struck. When they were given in payment in other countries, it was the custom to weigh them. What inclines me to this opinion, is, that when Joseph's brethren, at their return into Egypt, brought back the money which that patriarch had caused to be put into their sacks, they say, that they had found it in full weight, and had brought it back the same^q.

^a See le comm. du P. Calmet, t. I. p. 669.; Mem. de Trev. Mai 1724, p. 780; Dissertat. du P. Souciet, sur les médailles Hébraïques, p. 67. & 114.

There was formerly in France golden deniers with a lamb, and both smaller and greater ones with a sheep upon them.

^o The ancient money both of the Greeks and Romans, bore the impression of an ox. See part 2. b. 4. ch. 4. See also Plin. l. 33. sect. 13. p. 610.; Plut. t. 2. p. 274. F.

^p See Chardin, t. 4. p. 279 280.; Tavernier, t. 4. p. 337.; Hist. gen. des voyag. t. 10. planche 1. n. 6. planche 4. n. 9. planche 6. h. 12.; Bianchini, ist. univ. p. 522.; Tab. B. N. 18. ad cap. 35.

^q Gen. c. 43. v. 21.

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However that may be, it is certain, that, in the days of Jacob, commerce was carried on between different countries, and in many kinds of merchandise. The Ishmaelites and Midianites, to whom Joseph was sold by his brethren, came from the country of Gilead, and went into Egypt to sell their goods ^r, which consisted of spices, and several other precious things ^r. This supposes a regular trade, and of some standing, as these kinds of merchandise administer rather to luxury than mere necessity. The purchase which these merchants made of Joseph to sell him again in Egypt, shews also, that even then there was a trade in slaves in several countries ^r.

We see likewise, that, in very remote ages, there was a great trade in corn carried on in Egypt. In times of scarcity, that kingdom was the resource of all the neighbouring countries. During the seven years of famine which afflicted Palestine and the adjacent states, Egypt, by the care of Joseph, was in a condition to furnish corn to all the strangers who came there to buy it ^u. Correspondence was, even then, so well regulated, that it was not long before Jacob was informed of this, though he lived at a considerable distance from Egypt ^x.

As to the manner in which trade was carried on in these primitive times, we must make a distinction between land and sea trade.

Land-trade without doubt was first. Yet it must have been a considerable time before even this could be carried on with ease and safety. The art of breaking animals, and of using them commodiously for carriage, must first have been invented. Then highways must have been made, and those obstacles which nature has opposed to the free communication between different countries, removed or overcome. Semiramis, say historians, applied herself to render the roads practicable through the whole extent of her empire ^y. This is the first attempt of that kind taken notice of in history. Yet as there were several princesses of that name, I cannot confi-

^r Gen. c. 37. v. 25.

^r Ibid.

^r Ibid. v. 36.

^u Ibid. c. 42. v. 1. & 5.

^x Ibid.

^y Diod. l. 2. p. 126. 127.; Strabo, l. 16. p. 1071.; Polyæn. strat. l. 8. c. 26.

dently ascribe these magnificent works mentioned by several writers, to the most ancient Semiramis, the Queen of Ninus ².

If we believe several ancient authors, we must place in this period which we are now upon, the invention of the art of building bridges, an art so necessary to commerce. Herodotus says, that Menes, one of the first kings of Egypt, built a bridge over one of the branches of the Nile ^a. Diodorus ascribes the construction of that magnificent bridge over the Euphrates at Babylon to the ancient Semiramis ^b. I shall not now insist on the truth of these facts. I have already observed how far I think they may be depended upon.

The invention of carriages proper for transporting goods of a certain weight, might also be ranked among those arts which must have preceded the establishment of commerce by land. But I do not find that the ancients made much use of these kind of machines in transporting merchandise. There is no mention of them in ancient authors; and it is certain, that to this day they are not used in the Levant; though it was in these countries that commerce had its birth.

It appears, that in these places, from the remotest ages, they made use of beasts of burden for the transporting of goods. In long journeys they employed camels. The Ishmaelites and Midianites, to whom Joseph was sold, rode on camels ^c. That history, in my opinion, presents us with a striking image of the manner in which commerce by land is carried on in the Levant at this day. Several merchants join together, and form what they call a *caravan*. The scripture seems to me to represent these Ishmaelites and Midianites who bought Joseph, as forming such a caravan. The book of Job also may serve to shew us the great antiquity of this custom. It mentions the troops of Tema and of Sheba ^d, that is, caravans which set out from these two cities of Arabia.

We see also beasts of burden employed in the journey the sons of Jacob made into Egypt to buy corn. They perform-

^a See *supra*, b. 2. chap. 5. p. 168.

^b L. 2. n. 99.

^c L. 2. p. 121.

^d Gen. c. 37. v. 25.

^e Job, c. 6. v. 19. See le P. Calmet, *loco cit.*

ed that journey by land, and Moses tells us they made use of asses for carriage *. It is well known that in warm countries, these kind of animals are almost as much valued as horses or mules. They are infinitely superior to those in our climate.

One of the greatest obstacles which those who carried on commerce by land must have had to struggle with, was the difficulty of finding subsistence and lodging by the way. These first travellers must have carried provisions with them for themselves and their beasts. When they had a mind to take refreshment, they probably placed themselves in the day-time under the shade of some tree, and in the night retired to some cave. Afterwards tents came into use; every one carried his own tent with him, and pitched it in the most commodious and agreeable spot he found on the road. We find several examples of this practice in the history of Abraham in scripture. This patriarch always travelled with his tent †. This custom subsists to this day in the east.

As commerce increased, and these journeys became more frequent, they would perceive how dangerous and disagreeable it was to have no fixed and secure place by the way to repose in. The desire of gain would suggest to some people the thought of offering the use of their houses to travellers for payment. It was thus inns were by degrees established in several places. Herodotus ascribes this invention to the Lydians, but he does not fix the time of it ‡. Probably however it was very ancient. The Lydian monarchy may be reckoned among those which were formed in the most remote antiquity *. Besides, we may observe, that, in the days of

* Chap. 42. v. 26. See also c. 45. v. 21. & 23.

† Chap. 12. v. 8. c. 13. v. 18. § L. I. n. 94.

* Their first King whose name was *Menes*, was, say they, the son of Jupiter, and of the Earth. The meaning of this expression is well known. It was Lydus, one of his successors, say historians, who gave the name of Lydia to the country. See Herod. l. 1. n. 7 l. 4. n. 45. l. 7. n. 74.; Dionys. Halicarn. l. 1. p. 21.

But it seems more probable to me that this country derived its name from Lud, the son of Japhet. This is the opinion of Josephus, St Jerome, and several other authors both ancient and modern. See Bochart, Phaleg. l. 4. c. 26. & le P. Calmet, t. 1. p. 300.

Jacob ^b, inns were established in some places, though the ancient custom of carrying provisions for themselves and their beasts still continued ⁱ.

We may comprehend under the name of land-trade, that which was carried on by rivers and canals. The one must have been nearly as ancient as the other. The first cities were probably built on the banks of rivers. Their inhabitants needed provisions to be brought them. They would soon discover, that the rivers might be of great service for that purpose. Necessity would suggest the methods of making use of them for that end, and probably it was not long before such methods were discovered. Men must very soon have observed, on a thousand occasions, pieces of wood floating down rivers. After this observation, it was an easy and natural thought, to collect a number of such pieces of wood, to tie them together, and form a float of them. After they had found that this assemblage of pieces of wood kept above water, it would be as easy to discover that it would carry a smaller or greater weight in proportion to its size. Experience would soon teach them how to guide these kind of water-carriages, the only ones which were known in the first ages ^k.

These floats or rafts were probably succeeded by canoes, such as the savages use at present ^l. These are trunks of trees made hollow by means of fire. This second kind of vessels were both more commodious and more secure than floats. The goods in them were not so much exposed to be spoiled or carried away by the water. In ancient times these canoes made of a single tree, were much used ^m. They were known by the name of *Monoxyles* ⁿ. Sanchoniatho says, that Ousouïs, one of the most ancient heroes of Phœnicia, took a tree which was half-burnt, cut off its branches, and was the

^b Gen. c. 42. v. 27. See also Exod. c. 4. v. 24.

ⁱ Gen. c. 45. v. 21. & 23. c. 42. v. 27.

^k See Conon. narrat. 21. apud Phot. p. 433.; Plin. l. 7. sect. 57. p. 417. l. 12. sect. 42. p. 668.; Agatarchid. apud Phot. p. 1324.; Isidor. orig. l. 19. c. 1.

^l Rec. des voyag. au Nord, t. 9. p. 272.; Hist. de la Virginie, l. 3. c. 13. p. 315.; Voyage de Damp. t. 1. p. 93.

^m See Virgil. georg. l. 1. v. 136.; Hist. de la Chine, t. 1. p. 42.

ⁿ See Plato de leg. l. 12. p. 995.; Plin. l. 6. sect. 26. p. 328.

first who had the courage to expose himself upon the waters *.

Every country does not afford a sufficient number of trees, of a proper size for forming these canoes. It was necessary, therefore, to find out the art of imitating these natural vessels, by constructing artificial ones, of several pieces of wood joined together, of a proper solidity and capacity. Several ancient nations used a kind of boats, formed of slender rods, joined together in the manner of hurdles, and covered with skins †. These kind of boats are still used on the Red sea ‡. The barks of the people of Iceland are made of long poles placed cross-wise, and tied together with thongs of whales whiskers. They are covered with the skins of sea-dogs, sewed with sinews instead of thread §. The canoes of the savages in America are made of the barks of trees. I am persuaded, however, that it was not very long before they discovered the art of constructing vessels of several planks joined together, either with cords or wooden pins. Several nations still present us with models of vessels constructed in both these ways ¶.

Straight poles and oars were sufficient to conduct these kinds of vessels. In this manner, men in the remotest ages might navigate their rivers, and transport their merchandises from one country to another.

Experience having more and more encouraged them, they would at last venture to expose themselves upon the open sea. Let us examine in what manner, and by what degrees mankind might learn to conduct themselves on that terrible element. It is to the invention of this art that commerce owes its greatest improvements, and there is no invention of which mankind have so much reason to boast. We may even say of navigation, that it seems to surpass the limits of the human understanding, and to be beyond the utmost reach of our sagacity.

* *Apud* Euseb. præp. evang. l. i. p. 35. A.

† Cæf. de bell. civ. l. i. n. 51.; Plin. l. 7. sect. 57. p. 417.; Strabo, l. 3. p. 234. l. 16. p. 1124. See Scheff. de milit. nav. l. i. c. 3. p. 26.

‡ Pietro d'ella Valle, t. i. p. 269.

§ Hist. nat. de l'Islande, t. 2. p. 208. & 210.

¶ Lettr. édif. t. 18. p. 195.

C H A - P. II.

Of Navigation.

Several conjectures present themselves concerning the origin of navigation. Various accidents and events might have given birth to that art. The sea-coasts in many places are full of islands, at no great distance from the continent. Curiosity would naturally inspire men with an inclination to pass over into these islands. As this passage would not appear either very long, or very dangerous, they would attempt it. Success in one of these attempts would encourage to a second. Pliny relates, that anciently they sailed only among islands, and that on rafts ^c.

Fishing, to which several nations applied themselves in the earliest ages, might also contribute to the origin of navigation. I am, however, most inclined to think, that the first ideas of this art were owing to those nations which were seated near the mouths of rivers, where they fell into the sea. As they sailed upon these rivers, they would sometimes be carried out to sea, either by the current, by a storm, or even by design. They would be terrified at first at the violence of the waves, and the dangers with which they threatened them. But when they had got over these first terrors, they would soon be sensible of the great advantages which the sea might procure them, and, of consequence, would endeavour to find out the means of sailing upon it.

In whatever way mankind became familiar with that terrible element, it is certain, that the first essays in navigation were made in the most ancient times. Moses informs us, that the grandsons of Japhet passed over into the islands near the continent, and took possession of them ^d. It is also an undoubted fact, that colonies very soon sailed from Egypt into Greece ^e.

^c L. 7. sect. 57. p. 417.

^d Gen. c. 10. v. 5.

^e See *supra*, b. 1. art. 5. p. 64,

Sanchoniatho ascribes the invention of the art of building ships, and the glory of undertaking sea-voyages, to the Caberites ^y. The ancient traditions of the Phœnicians make the Caberites cotemporary with the Titans ^z.

I have described in the preceding chapter, what was probably the first form and construction of the vessels used in the navigation of lakes and rivers. Such also would be the form of the first ships. But experience would soon convince them, that ships designed for navigating the seas ought to be of a different construction from those intended for rivers. They would make it their study, therefore, to give such a form and solidity to ships designed for the sea, as would enable them to resist the impetuosity of its waves. They would next endeavour to find out a method of guiding and directing them with ease and safety. Sculls and oars were the only instruments that occurred to them for some time. It must have been long before they thought of adding the helm. The ancients imagined, that it was the fins of fishes which first suggested the idea of oars, and that the hint of the helm was taken from observing how birds direct their flight by their tails ^a. The shape of ships, excepting the sails, seems to me to be copied from that of fishes. What the fins and tail are to fishes, that the oars and helm are to ships. But these are only conjectures more or less probable, and not worth examining to the bottom.

The action of the wind, whose effects are so sensible and so frequent, might soon suggest the use of sails. But the manner of adjusting and managing them was more difficult, and would not be so soon discovered. This, I am persuaded, was the very last part of the construction of ships which was found out. I am confirmed in this opinion, by the practice of the savages and other rude nations, who make use only of oars, but have no sails. It would be the same in the first ages. The first navigators only coasted, and cautiously avoided losing sight of land. In such circumstances, sails

^y *Apud* Euseb. præpar. evang. l. I. p. 36. A.

^z *Ibid.* ^a Plin. l. 10. sect. 12. p. 551.

would have been more dangerous than useful. It required the experience of several ages to teach navigators the art of employing the wind in the direction of ships.

If we believe, however, the ancient traditions of the Egyptians, this art of using the wind by means of masts and sails, was exceeding ancient. They give the honour of this discovery to Isis^b. But over and above the little credit which is due to the greatest part of the history of that princess, we shall see by and by, that this discovery cannot be ascribed to the Egyptians.

Men must soon have endeavoured to find out some method of stopping ships at sea, and keeping them firm at their moorings. They would at first make use of various expedients for this purpose, such as large stones, hampers or sacks full of sand or other heavy bodies^c. These they fixed to ropes, and threw into the sea. These methods would be sufficient in the first ages, when the vessels they used were only small and light barks. But as navigation improved, and larger ships were built, some other machine became necessary. We know not at what time, or by whom the anchor, that machine at once so simple and so admirable, was invented. We find nothing certain on this subject in ancient authors^d. Only they agree in placing this discovery in ages greatly posterior to those we are now examining. They ascribe this invention to several different persons. I imagine, the anchor, like several other machines, might be found out in many different countries, much about the same time. It is certain, that the first anchors were not made of iron, but of stone^e, or even of wood^f. These last were loaded with lead. We are told this by several writers, and amongst others by Diodorus. This author relates, that the Phœnicians, in their first voyages into Spain, having amassed more silver than their ships could con-

^b Hygin. fab. 277.; Cassiod. var. l. 5. ep. 17.

^c Appollon. Argonaut. l. 1. v. 955.; Plin. l. 36. sect. 23. p. 741. See le Tresor d'H. Etienne, au mot *Αἰθός*.

^d See Plin. l. 7. sect. 57. p. 418.; Paus. l. 1. c. 14.

^e Stephan. Byzant. voce *Ἀγκυρῶν*, p. 15.

^f Arrian. Peripl. pont. Eux. p. 121.

tain, took the lead from their anchors, and put silver in its place^s. We may observe further, that the first anchors had only one flook. It was not till many ages after, that Anacharsis invented one with two^h.

All these different kinds of anchors are still in use in some countries. The inhabitants of Icelandⁱ, and of Bander-Congo^k, use a large stone with a hole in the middle, and a stick thrust through it. In China, Japan, Siam, and the Manillas, they have only wooden anchors to which they tie great stones^l. In the kingdom of Calicut they are of stone^m. The ignorance of the first ages, and of many nations to this day, of the art of working iron, has been the occasion of all these rude and clumsy contrivances.

Though the first navigators coasted along the shores, and took all possible pains not to lose sight of land, yet, in the very first ages, they must frequently have been driven off to sea by storms. The confusion and uncertainty they found themselves in when these accidents happened, would put them upon studying some method of finding where they were in these circumstances. They would soon be sensible, that the inspection of the heavenly bodies was the only thing that could afford them any direction. It was in this manner, probably, that astronomy came to be applied to navigation.

From the first moment men began to observe the motion of the heavenly bodies, they would take notice, that in that part of the heavens where the sun never passes, there are certain stars which appear constantly every night. It was easy to discover the position of these stars in respect of our earth. They appear always on the left hand of the observator whose face is turned to the east. Navigators were soon sensible that this discovery might be of great advantage to them, as these stars constantly pointed out the same part of the world. When they happened to be driven from their course, they found, that,

^s L. 5. p. 358. ^h Strabo, l. 7. p. 464.; Plin. l. 7. sect. 57. p. 418.

ⁱ Hist. nat. de l'Islande, t. 1. p. 263.

^k Gemelli, Giro del' mondo, t. 2. p. 294.

^l Lettr. édif. t. 14. p. 12.; Voyage des Holland. t. 2. p. 77. & 83; Hist. gen. des voyag. t. 8. p. 308.; Schouten, t. 1. p. 84.

^m Scheffer. de milit. pav. l. 2. c. 5. p. 148.

in order to recover it, they had only to direct their ship in such a manner, as to bring her into her former position, with respect to those stars which they saw regularly every night.

Antiquity gives the honour of this discovery to the Phœnicians^a, a people equally industrious and enterprising. The Great Bear would probably be the first guide which these ancient navigators made choice of. This constellation is easily distinguished, both by the brightness and peculiar arrangement of the stars which compose it. Being near the pole, it hardly ever sets, with respect to those places which the Phœnicians frequented. We know not in what age navigators first began to observe the northern stars, for the direction of their course. But it must have been in very ancient times. The Great Bear is mentioned in the book of Job^b, who seems to have conversed much with merchants and navigators^c. The name by which that constellation was known among the ancient inhabitants of Greece, and the tales which they related about its origin, prove that it was observed for the direction of navigators in very remote ages^d.

But the observation of the stars in the Great Bear was a very imperfect and uncertain rule for the direction of a ship's course. The truth is, this constellation points out the pole only in a very vague and confused manner. Its head is not sufficiently near it, and its extremities are more than forty degrees distant from it. This vast extent occasions very different aspects, both at different hours of the night in the same season of the year, and in the same hour in different seasons. This variation would be considerably increased, when it came to be referred to the horizon, to which the course of navigators must necessarily be referred. They must have made an allowance for this variation by guess; which could not but occasion great mistakes and errors, in those ages, when they were guided only by practice instead of geometrical rules and tables, which were not invented till many ages after.

^a See *infra*, p.

^b See our dissertation on the constellations mentioned in the book of Job.

^c See *supra*, b. 3. c. 2. p. 241.

^d See Bianchini, *istor. univ.* p. 295; *Spéctacle de la nature*, t. 4. p. 317. &c.

It must have been long before navigation arrived at any tolerable degree of perfection. There is no art or profession which requires so much thought and knowledge. The art of sailing is of all others the most complicated, its most common operations depend upon various branches in different sciences. It appears however, that, even in the ages we are now examining, some nations had made some progress in maritime affairs. These discoveries can be ascribed to nothing, but that love to commerce with which these nations were animated, and their great ardor for the advancement of it.

ARTICLE I.

Of the Phœnicians.

Those of the descendants of Noah who settled on the coasts of Palestine, were unquestionably the first who found out the art of making navigation subservient to commerce. These people are known in scripture by the name of Canaanites^r, a word which in the language of the east signifies *merchants*^r. They are the same who were afterwards called Phœnicians by the Greeks^r. Sidon, which was originally their capital city^s, was founded by Sidon the eldest son of Canaan^x. For a long time it enjoyed the sovereignty of the Mediterranean^y. It is easy to satisfy ourselves of this, by reading the most ancient writers. Homer, as Strabo observes, speaks only of Sidon^z, and plainly enough intimates that its inhabitants carried on the greatest trade. This city was afterwards eclipsed by its own colony Tyre^a. But this was many ages later than the times we are now examining.

^r Num. c. 13. v. 30.

^s See Braun. de vestitu sacerdot. Hebr. p. 251.; L'hist. univers. t. 1. p. 219.

^t Ibid. p. 576. t. 2. p. 53. & 61.; Marsh. p. 290.; Calm. t. 1. p. 272. t. 3. p. 131.; Mem. de Trev. Juill. 1704, p. 1184. Juin 1705, p. 1039.

^u Marsh. p. 290.; Hist. univ. t. 2. p. 54. & 74.; Bochart, Phaleg. l. 4. c. 37.

^x Gen. c. 10. v. 15. & 19.; Jos. antiq. l. 1. c. 6.

^y P. Mela, l. 1. c. 12.; Strabo, l. 16. p. 1097.

^z L. 16. p. 1097. ^a Isaiah, c. 23. v. 12.; Justin. l. 18. c. 3.

The Phœnicians, so I shall henceforth call them, inhabited a very barren and ungrateful soil : but their own industry procured them those blessings which nature seemed to have refused them. They applied themselves to the cultivation of the arts, and made a very great and rapid progress in them. The Phœnicians seem to have peculiarly excelled in manufactures and works of taste *. In consequence of this, commerce was the great object of their attention. They have been always esteemed the inventors of this art, and the instructors of other nations in the practice of it ^b. They have been honoured also by all antiquity, as the inventors of weights and measures ^c, of arithmetic ^d, and of writing ^e. In a word, the ancients believed it was the Phœnicians who found out the art of casting accounts ^f, keeping registers, and every thing that belongs to a factory.

With so strong a turn towards commerce, this people soon perceived, that they might derive unspeakable advantages from the sea. Accordingly they are accounted by all antiquity, the inventors of navigation ^g. Nature had formed several very safe and commodious harbours upon their coasts. Being in the neighbourhood of Libanus, and several other mountains, they could easily procure from thence wood proper for the construction of ships. The Phœnicians knew how to make the most of all these advantages. Success having crowned their first enterprises, in a few ages they established a most extensive and flourishing trade all over the Mediterranean ^h.

It appears, that, in the days of Abraham, the Phœnicians were considered as a very powerful people ⁱ. It is certain also, that,

* See Bochart, in Phaleg. l. 4. c. 35. p. 343.

Sidon was famous for making linen, tapestry, and fine veils, for working metals and wood, and the invention of glass, &c.

Tyre was celebrated for the art of dying, particularly purple, for working ivory, &c.

^b Dionys. Perieget. v. 908.; See also Huet, hist. du commerce, p. 65.

^c Polydor. Virgil. l. 1. c. 19.

^d See supra, b. 3. c. 2. art. 1. p. 212.

^e Supra, b. 2. c. 6. p. 182.

^f Strabo, l. 16 p. 1098. l. 17. p. 1136.; Dionys. Perieget. v. 908.

^g Dionys. Perieget. v. 907.; Tibull. l. 1. eleg. 7. v. 20.

^h Sanchoniat. apud Euseb. præpar. ev. l. 1. p. 37. B.; Diod. l. 5. p. 345.

ⁱ Gen. c. 12. v. 6.

in these times they sailed to the coasts of Greece. They were reproached for having carried off from thence Io, the daughter of Inachus ^k. This prince reigned about the time of the birth of Isaac. We find likewise that mention is made of the sea-trade of this people, in the last words of Jacob to his children ^l. It is unquestionable, therefore, that the Phœnicians carried on a very extensive trade in the first ages after the deluge. This is all we know of these times. For the manner in which they carried on their trade, the commodities in which they chiefly dealt, and, in a word, all the particulars, are quite unknown to us. We have even but very imperfect notions of the countries to which the Phœnicians sailed in these first ages. For which reason, it would be useless to insist any longer on this article.

Neither are we better informed about the manner in which that people navigated their ships. We know not what were their first discoveries, nor what their successive improvements in maritime affairs. There remains not the least vestige of any of these things in antiquity. Ancient writers on these subjects express themselves only in vague and general terms. They only inform us, as I said already, that the Phœnicians were very soon sensible, that the observation of the heavenly bodies might be of great service to them in directing the course of their ships ^m. I shall treat this matter more minutely in the second part of this work. I shall there enter into a disquisition concerning the construction and form of their ships.

ARTICLE II.

Of the Egyptians.

WE must not rank the Egyptians among those nations who made early discoveries in navigation. Their way of

^k Herod. l. 1. n. 1.

^l Gen. c. 49. v. 13.; See also Judg. c. 5. v. 17.

^m Dionys. Perieg. v. 909.; Strabo, l. 16. p. 1098.; Plin. l. 5. sect. 13. p. 259. l. 7. sect. 57. p. 418.; P. Mela, l. 1. c. 12.; Propert. l. 2. eleg. 27.

thinking in ancient times, was quite inconsistent with maritime enterprises. They entertained an extreme aversion to the sea, and regarded those as impious who dared to embark upon it *. Superstition inspired them with these sentiments. In their ancient theology, the sea was the emblem of Typhon, the sworn enemy of Osiris. Hence that abhorrence which the Egyptian priests still retained of the sea, and every thing it produced, to such a degree, that they would neither use salt, nor eat fish †. They avoided also all intercourse with mariners; a maxim which they still adhered to, even after the rest of the nation had begun to frequent the sea ‡.

There were other causes which must have restrained the ancient inhabitants of Egypt from applying themselves to navigation. This country produces no wood proper for the construction of ships §. Besides, its sea-coasts are very unhealthy, and have few good harbours ¶. Last of all, the policy of the first sovereigns of Egypt was destructive of all commerce by sea. They excluded all strangers from their harbours †. Naucratis was the only place where they were permitted to put in. That city had a communication with the sea by the Canopean mouth of the Nile. If a ship entered any of the other mouths of that river, the whole crew were first obliged to swear, that they had been driven in against their will. After this ceremony, they made them bring about the ship to the Canopean mouth of the river. If the winds opposed this, they unloaded the cargo into small barks, which coasted along the Delta, till they arrived at Naucratis ‡. They use the same precautions at present in Japan §.

We may be assured, that in general the Egyptians did not

* The Persians think in the same manner; they have no sea-trade, and account all atheists who frequent the sea.

† Plut. t. 2. p. 363.; Herod. l. 2. n. 37.

‡ Plut. *laco cit.*

It was perhaps the Egyptians which Homer meant, when he speaks of a nation who knew nothing of navigation, and made no use of salt. *Odyss.* l. 11. v. 121. &c.

§ Plin. l. 16. sect. 76. p. 35.; *Voyage d'Egypte par Granger*, p. 12. & 19.

¶ Diod. l. 1. p. 36.; Strabo, l. 17. p. 1174.

† Diod. l. 1. p. 78.; Strabo, l. 17. p. 1142.

‡ Herod. l. 2. n. 179.

§ Kœmpfer, *hist. du Japon*, t. 2. p. 78.

addict themselves to commerce. The men disdained to meddle with it, but left it entirely to the women^a. Besides, it was a maxim among that people, never to leave their own country^x. They thought in this particular, as the Chinese^y, did formerly, and as the Japanese^z do at present. The Egyptians waited till other nations brought them the things they stood in need of^a; and they did this with the more tranquillity, as the great fertility of their country in these times left them few things to wish for. It is not at all surprising, that a people of such principles did not apply to navigation till very late.

It appears indeed, that some colonies went from Egypt into Greece in ancient times^b. But a small number of individuals do not form an exception to the general character of a nation. Besides, we may presume, that the leaders of these colonies were adventurers, who either discontented with, or banished from their country, shipped themselves on board Phœnician vessels^c. This they might easily do; for the Phœnicians^d carried on a regular trade with Egypt from the remotest ages. Finally, it was not trade or navigation these colonies had in their view; and therefore we can draw no conclusion from thence in support of sea-trade, which seems to me to have been much neglected by the ancient Egyptians^e.

We cannot affirm the same of the other nations who inhabited the coasts of Africa, which are washed by the Mediterranean. It appears from several passages of ancient history, that these nations applied themselves very early to navigation. Atlas King of Mauritania was represented by several ancient writers, as the inventor of the art of ship-building^f. The worship of Neptune had been brought from Lybia into Greece^g. It does not appear however, that the people of these countries

^a Herod. l. 2. n. 35. ^x Clem. Alex. Strom. l. 1. p. 354.

^y Kœmpfer. hist. du Japon, t. 2. p. 231. ^z Ibid. p. 176.

^a Strabo, l. 17. p. 1142.; Lucan. Pharsal. l. 8. v. 446.

^b *Supra*, b. 1. art. 5. p. 65. & 66.

^c See Marsh, p. 109. & 110.

^d Herod. l. 1. n. 1. See part. 2. b. 4. c. 2.

^e See Herod. l. 2. n. 50.

^f Clem. Alex. Strom. l. 1. p. 362. ^g Herod. l. 2. n. 50.

had either a very famous or very extensive sea-trade : at least, there are no vestiges of this to be found in the writings of the ancients.

We have more information left us concerning the sea-trade of those nations of Asia which were settled on the coasts of the Red sea. It is certain that they applied themselves to it, in the earliest ages. We have evidences of this, both in sacred and profane writers. These last are almost unanimous in considering Erythras as the inventor of navigation. They fix the place of his residence towards the eastern parts of the Red sea ^b. This country, as I imagine, is the same which the scripture calls Idumea. It had been originally inhabited by a people named Horites or Horeans ⁱ. In these first ages it was called the land of Seir ^k. The Horites were then under the government of several chiefs ^l. The settlement of this people must have been very ancient, since they are named among the nations which Chedorlaomer conquered in the days of Abraham, before the birth of Isaac ^m. After the death of this patriarch, his son Esau went and dwelt in the land of Seir ⁿ. At first, I imagine, he lived there as a private person ^o ; but, in the sequel, his posterity having defeated and destroyed the Horites ^p, made themselves masters of the country ^q. It was undoubtedly in consequence of this event, that the land of Seir changed its name, and was called Edom or Idumea from the name of Esau ^r.

It seems evident, that the Horites applied themselves to navigation in the very first ages. It was by this means they came to carry on a very great commerce. We see that in the days of Job, who I believe was cotemporary with Jacob ^s, their trade chiefly consisted in gold, precious stones, coral, pearls, and other merchandise of great value ^t. A trade of this

^b Agatarchid. apud Phot. p. 1324.; Strabo, l. 16. p. 1125.; Plin. l. 7. sect. 97. p. 417.; P. Mela, l. 3. c. 8.

ⁱ Gen. c. 36. v. 20. & 22. ^k Ibid. v. 30.

^l Ibid. v. 21. 29. 30. ^m Ibid. c. 14. v. 6.

ⁿ Ibid. c. 36. v. 8. ^o See hist. univ. t. 1. p. 556.

^p Deut. c. 2. v. 12. ^q See hist. univ. t. 1. p. 557. & 559.

^r Gen. c. 25. v. 30. c. 36. v. 1. ^s See our dissertation.

^t Job, c. 28. v. 16. & 19.

kind, which administered only to luxury, proves the great antiquity of commerce and navigation among that people. In general, from the manner in which Job speaks of ships ^u, of whale-fishing ^x, and of the constellations ^y, we may conclude, that he lived among a people who made navigation their chief employment ^z. I have proved, as I think, that Idumea was the country of Job ^a.

With regard to the nations of the Higher Asia, I can say nothing about their progress in navigation, or the state of commerce among them in these remote times. What Diodorus says of the fleet which Semiramis built on the river Indus, is mixed with too many fables to merit any credit. The little we can gather from it is, that the people of these countries had then but small skill in maritime affairs. For, in effect, Diodorus says, that Semiramis brought from Phœnicia and Syria, the workmen who built the ships which she used in attacking the King of India ^b.

It would likewise be difficult to say any thing at present of the state of navigation and commerce among the European nations. The history of this part of the world, in the ages we are now examining, is so little known, that it is impossible to give any account of these matters, or so much as to form conjectures about them.

From the several facts which have been now enumerated, we may draw this conclusion, That navigation had made some progress in the ages which are the subject of this first part of our work: That this progress must be ascribed to that ardor with which some nations applied to commerce; for nothing but that could ever have formed men to the seafaring life. I might add, that the degree of perfection to which the arts had then arrived in some countries ^c, would alone be sufficient to establish the truth of these propositions. The arts are the fruits of luxury, luxury is the effect of riches; but the great source

^u Job, c. 9. v. 26.

^x Chap. 40. v. 25. 26.

^y See our dissertation on the constellations spoke of in the book of Job.

^z See Newton, chronol. of Egypt, p. 229.

^a See our dissertation on Job.

^b B. 2. p. 130.

^c See *supra*, b. 2. c. 5.

of riches is commerce, and without navigation there can be no regular flourishing commerce.

I shall say nothing at present of sea-fights. We have no evidence that there were any in the ages we are now examining. A considerable time must have elapsed before men could have acquired sufficient skill and courage to engage in battles at sea. I do not imagine, that, in these ages, there were any ships of war, much less naval armies. The most that we can suppose, is, that there might be some pirates, that is to say, some navigators, who trusting to the largeness of their ships, and number of their crews, might fall upon smaller vessels which were incapable of making any resistance.

I imagine too, that the practice of making descents upon the coasts, and plundering their inhabitants, might prevail even in these ages. The ancient navigators, it is probable, would not neglect this method of enriching themselves. This was the easier, as the art of fortifying cities was then unknown. Besides, I shall have occasion to shew in the second part of this work, how much the desire of plunder and booty must have contributed originally to the improvement of navigation.

B O O K V.

Of the Art Military.

THE spirit of discord has prevailed in all ages on this earth. There were quarrels and fightings as soon as there were men. It is needless to endeavour to discover the origin of their first disputes. They could spring from nothing but envy, that great source of all animosities. In the first ages, men would fight like wild beasts about their food, their females, the possession of a cave, the hollow of a rock, or of a tree. They would use no other arms but those which nature furnished. Fury would be their only guide, the gratification of their brutal appetites their only end. When victorious, they would set no bounds to their rage and vengeance, but endeavour to destroy, exterminate, and even devour each other*. Let us hasten from these scenes of horror and confusion, of which several countries at this day exhibit a too faithful image.

A number of families united themselves into one society. The interests of all the members of each of these societies became common. But scarcely were these societies formed, when they commenced hostilities against each other. These first wars would be nothing but mere incursions. A party of men got together, they ravaged the enemy's country, destroyed their huts, carried off their flocks, and above all endeavoured to take prisoners, and make them slaves. In these ages they never dreamed of making conquests. To do mischief to their enemies, was the only design of their military expeditions. When hostilities were ended, each party returned into their

* See *supra*, b. 2. p. 79.; Mem. de Trev. Fevr. 1708, p. 224.

own country. It is in this manner the savages make war at present.

But when a great number of families formed a considerable state under one sovereign, ambition had its birth, and other views were entertained. Some of these sovereigns formed the design of enlarging the limits of their dominions. They took up arms from other motives than a desire of doing mischief. They proposed more lasting advantages than a mere irruption. Policy came to the assistance of ambition, and directed its steps. They set bounds to the horrors of war, and endeavoured rather to subdue than to exterminate. Such was the origin of the first empires. These were more or less extensive, according to the degrees of ambition, ability, and good fortune of the princes who took up arms.

The first example recorded in history of a war undertaken with the design of making conquests, is as high as the age of Abraham. It is said in Genesis, that Chedorlaomer, King of Elam, had subdued the Kings of Pentapolis *. They continued in a state of subjection twelve years, but in the thirteenth year they endeavoured to withdraw from his obedience ^b. This fact shews us that Chedorlaomer had made a moderate use of his victory; that he had left the kings of Pentapolis upon their thrones, on condition, no doubt, of their paying him an annual tribute.

These princes having revolted, joined their forces, and entered into an alliance, to the number of five, the better to resist the King of Elam, who marched against them the year following. Chedorlaomer, in order to secure the success of his expedition, strengthened himself with the assistance of three kings, who were probably his neighbours or his allies. He defeated the five kings of Pentapolis; but being irritated at their revolt, he resolved to take a bloody revenge. Sodom and Gomorrah were at this time given up to be plundered. They seized all the provisions that could be found in them, and carried the inhabitants into captivity ^c.

* This name is given to that valley, where the five cities were situated, which God destroyed by fire. It is imagined they stood near the river Jordan, on the banks of the lake Asphaltites.

^b Gen. c. 14. v. 4.

^c Gen c. 14. v. 11. & 16.

The sequel of this history is well known. Abraham being informed, that Lot, his brother's son, was among the captives, picked out such of his servants as were best able to bear arms, pursued the conquerors, defeated them, recovered the plunder and the prisoners, and restored the King of Sodom and his allies to their thrones ^d.

The scriptures do not furnish us with any other fact, in the ages we are now considering, that has any relation to conquests. Profane historians do not seem to have been acquainted with any conqueror more ancient than Ninus King of Assyria, for we must not rank Bacchus and Osiris in that number. The design, it is said, of these first heroes, was to civilize, and not to subject the people they overcame. Ninus, therefore, has always passed among the writers of antiquity, for the first prince who had been animated with the ambition of conquest, and pursued a rational plan for its accomplishment ^e. This however is a mistake. The reign of Ninus was long posterior to that of Chedorlaomer ^f, whose military expeditions ought to be considered as real conquests, undertaken with that view, and conducted upon a regular plan.

To return to what profane historians have transmitted concerning Ninus; this monarch, they tell us, inflamed with ambition, thought of nothing but wars and conquests. He began by making an alliance with the King of Arabia. Strengthened by this alliance, he attacked the Babylonians, defeated, and imposed a tribute upon them. After this, marching from conquest to conquest, he subdued Media, Persia, Armenia, and several other provinces ^g. Thus, by uniting many kingdoms under his dominion, this prince formed the famous empire of the Assyrians. This empire maintained itself a long time, through the care Ninus had taken to strengthen it ^h.

This monarch, at his death, committed the government to his Queen Semiramis, a princess of a masculine and undaunt-

^d Gen. c. 14. v. 14. &c.

^e Diod. l. 2. p. 113; Justin. l. 1. c. 1.; Syncell. p. 64.

^f See *supra*, b. 1. art. 3. p. 42.

^g See Diod. l. 2. p. 114. &c.; Justin. l. 1. c. 1.

^h Justin. *ibid.*

ed spirit, who being ambitious, and fond of glory, resolved to pursue the footsteps of her husband. She made war, and succeeded in her first enterprises. But having turned her arms against India, she was defeated, and forced to retire ¹.

Ninias, the son of Ninus and Semiramis, mounted the throne after the death of that princess. Disliking the warlike enterprising humour of his parents, he employed all his care in preserving peace, through the whole course of his reign ^k. From this time, the history of Asia contains nothing concerning war, during the ages we are now examining.

We are entirely ignorant of the history of the first wars of the Egyptians. We hear of no conqueror among that people before Sesostris, whose reign falls in those ages which are to be the subject of the second part of this work. It is however very certain, that the military art had been known and cultivated in Egypt in the most ancient ages. From time immemorial, the revenues of the state had been divided into three parts, one of which belonged to the priests, the second to the king, the third to the soldiers ^l. It appears then, that the Egyptians had very early provided the means of raising troops, and that these troops must have been considerable for their numbers. Accordingly we see, that, in Joseph's time, there was in Egypt a captain of the guard, who is represented in scripture as a considerable personage, having a particular jurisdiction annexed to his office ^m. We find also, that Pharaoh pursued the Israelites, at the first news of their departure out of Egypt, with a great army both of horse and foot. The quickness with which, as Moses represents it, that prince raised this formidable army ⁿ, necessarily supposes, that Egypt then enjoyed a regular system of government, that great care was taken to keep a numerous body of troops constantly on foot, well disciplined, and ready to march where-ever there was occasion. These facts are sufficient to make us think, that Egypt was one of the first countries where the military

¹ See Diod. l. 2. p. 128. & 133.; Justin. l. 1. c. 2.

^k Diod. l. 1. p. 134.

^l See *supra*, b. 1. art. 4. p. 54.

^m See Gen. c. 39. v. 1. c. 40. v. 3.

ⁿ See Exod. c. 14.

art had made any considerable progress. I shall say nothing at present of the order and discipline of the Egyptian armies. Not that the Egyptians, in the times we are treating of, wanted regulations on that subject. This is not to be imagined. But these regulations are unknown to us. Sesostris seems to have been the author of all those ordinances we meet with in ancient authors, concerning the troops and military affairs of Egypt. I reserve therefore the few particulars which remain relating to the military discipline of the Egyptians, to the age in which that prince flourished.

With respect to Europe, the events which happened in that part of the world, in the ages of remote antiquity, are involved in such impenetrable darkness, that we can discover nothing concerning their manner of making war. We know only, that the leaders of some colonies, called by the ancients Titans, leaving Egypt, seized upon a great part of Europe, and there founded a vast empire, which comprehended Greece, Italy, Gaul, and Spain*. But the particulars of all these conquests are to us unknown. We may, I think, in general conclude, from the great ease with which these princes subdued so great an extent of country, that Europe at that time was but thinly inhabited, and that its inhabitants were not a warlike people.

It is but too visible, how ill provided we are with facts and circumstances relating to the ages which are the subject of this first part of our work. This is not because great events and important revolutions did not then happen in the world, but because we are almost totally ignorant of them. Even the little that is handed down to us, is strangely disguised with fables. Let us endeavour, however, from the glimmering lights we have, to give some idea of the state of the military art in this period.

We can say nothing certain concerning their manner of raising troops, and forming an army in the first ages. I imagine that originally every body without distinction went out to war, except old men, women, and children. Afterwards they

* See *supra*, b. I. art. 5. p. 65.

made choice of such men as were most robust, and best able to endure fatigue. At last they hit upon the thought of allotting a certain number of men wholly to the profession of arms. This scheme of having a body of troops always on foot, to prevent their being surprised, must have been the contrivance of some civilized nation. I think I have demonstrated, that this practice prevailed in Egypt in the most ancient times ^p.

It does not seem probable, that, in these ages, the troops were kept in pay. The soldier received no pay, and expected no other reward for his labours and services, but his share of the booty taken from the enemy. We see that in the days of Abraham there were regulations settled for the division of the booty. This patriarch gave the tenth of the spoils which he had taken from Chedorlaomer, and the kings his allies, to Melchisedec King of Salem, and priest of the most high God *. The King of Sodom, in acknowledgment of the great service Abraham had done him, offered this patriarch every thing he had recovered from the enemy, but only such of his own subjects as had been delivered from captivity by that victory. Abraham refused this offer of the king of Sodom; but he took care that his allies, Aner, Eshcol, and Mamre, should have their share of the booty taken from the enemy ¹.

It required several ages to repeople the world, and repair the deplorable destruction occasioned by the deluge. The first armies consequently could not be very numerous. This is confirmed by what ancient traditions tell us of the military expeditions of Osiris, Bacchus, and the Titans. The facility, the extent, and the rapidity of their conquests, demonstrate that the earth at that time was almost a desert, and that they were followed only by a small number of troops. It would be considered at present as a great enterprise, to travel over the countries which they are said to have subdued.

The testimony of scripture serves also to support what we

^p *Supra*, p. 307.

* We are not told in scripture upon what title Abraham gave Melchisedec the tenth of the spoils taken from the Elamites; but there is no doubt the patriarch, in that particular, conformed to some established regulation.

¹ Gen. c. 14. v. 21. &c.

have advanced. It is said, that Chedorlaomer had subdued the kings of the Pentapolis. This prince was King of Elam, that is, of Persia. It is well known at how great a distance this country is from the Dead sea, on the banks of which the district called Pentapolis, was situated. Chedorlaomer, therefore, could not be attended by a great number of troops. It is no easy matter to transport a numerous army several hundreds of leagues. The countries too which separate Persia from the Pentapolis, must have been very ill peopled; otherwise Chedorlaomer must have found great difficulty in making that conquest, and still greater in keeping it near thirteen years.

The strongest proof that the forces of Chedorlaomer, and the kings his allies, were very few, is this, that Abraham with 318 men got together in a haste, defeated the combined army of these princes^r. The scripture, it is true, says, he attacked them in the night^t. But this circumstance only implies, that the troops of Chedorlaomer were somewhat superior to those of Abraham. If we allow the army of the allied kings to have been six or seven thousand, it will be sufficient to answer all objections; and I can see no reason to imagine they were more considerable.

I fancy we might affirm almost the same things of the armies of Ninus and Semiramis. For no regard is due to what Ctesias and other writers have said of the military forces of these monarchs. Their accounts bear the plainest marks of the most extravagant exaggeration. If we would believe them, the army which Ninus assembled for the conquest of Bactriana, was composed of seventeen hundred thousand foot, two hundred thousand horse, ten thousand six hundred chariots, armed with scythes^r. By adding to this number the persons necessary to attend on such an army, it will follow, that Ninus had in the field more than three millions of mouths.

This is but a small number, however, in comparison of the forces which Semiramis, according to the same authors, set on foot for the conquest of India. Her army, say they, amount-

^r Gen. c. 14. v. 14.^t Ibid. v. 15.^r Diod. l. 2. p. 117.

ed to three millions of infantry, five hundred thousand cavalry, and one hundred thousand chariots. There were, besides, one hundred thousand men mounted on camels, not to mention two thousand ships for passing the Indus ^u. According to this account, there must have been in this army between six and seven millions of mouths.

They add, that the King of India made still greater preparations for his defence, and assembled a more numerous army than that of Semiramis ^x. According to our former calculations, the army of this prince, and its attendants, might amount to near ten millions. When these armies met, the number of fighting men must have been between nine and ten millions. It is a pity Ctesias and his copyists have not told us, how such armies were subsisted, and where they found a plain to engage upon ^{*}. It would be wasting time to enter upon a serious confutation of such improbable stories. The immense extent of country which they make Ninus and Semiramis to have conquered, is sufficient to destroy their own accounts ^y. We have always a right to conclude, either that they are exaggerated, or that, if their conquests were as extensive as they are said to have been, the world could not be very populous, and consequently their armies could not be very great.

I imagine also, that the first armies were wholly composed of infantry. The art of using animals in war, must have been unknown for some time. The savages to this day are destitute of this advantage; and therefore I cannot believe, that it was used in remote antiquity. But by degrees methods would be found out of breaking and taming animals. When this was done, it would be natural enough to think of using them in war. Several of them are very fit for that purpose. In perusing the histories of the different nations of the world, we find, that horses, elephants, camels, dogs ^z, and even

^u Ibid. p. 130.

^x Diod. l. 2. p. 131.

^{*} It must be owned, that these accounts appeared suspicious to Diodorus. But he has endeavoured to justify them. See p. 117.

^y Diod. l. 2. p. 114. 115. & 128.

^z See Strabo, l. 4. p. 305.; Alian. hist. anim. l. 7. c. 38.; Plin. l. 8. sect. 61. p. 463.

lions^a, have been used in war. But we know not in what periods these customs were introduced.

The horse, of all animals, is most proper for war; and it is probable that this was soon observed. The question is, to know in what manner this animal was originally used in battle. He may be used in two different ways, either by yoking him to a chariot, or by mounting him. We must first examine whether the practice of yoking or mounting a horse was prior, and which of them is most easy and natural, and then determine in which of these two ways the horse was first used in battle.

Without entering into all the disquisitions which this question might occasion, I am persuaded, the horse was used in drawing and carrying loads, before he was mounted.

The wildness of the most mettlesome horse is curbed, or at least diminished, by the weight he draws or carries. It seems then the most simple and easy manner of making use of horses, that with which men probably began, was to yoke them to some weight, or to lay it upon them^b. In the preceding book, I have proposed some conjectures on the origin of chariots, and shewn that this invention was exceeding ancient. I observed also, that these machines were not then more curious in their construction than our carts^c. Therefore it would not require a great deal of skill to drive them.

The case is not the same with riding. This art appears to me more complex and difficult, than that of guiding a car. Being less natural, it probably occurred to mens thoughts the last. Accordingly we see from all the remaining monuments of antiquity, that horses were then much more commonly used in drawing than in carrying^d. With respect to the precise point we are now examining, viz. whether chariots or cavalry were first used in battle, history decides, that the use of chariots preceded that of cavalry^e. Let us take notice, further, that it must have been originally much easier to make use of

^a See Lucret. l. 5. v. 1309.; Diod. l. 1. p. 57.; Plut. t. 2. p. 358.

^b See Acad. des inscript. t. 7. M. p. 315.

^c *Supra*, b. 3. p. 264.

^d See part 2. b. 5. chap. 3. p. 64.

^e Palaphat. de incred. c. 1. p. 9.

chariots, than of cavalry in battle. The combatant who mounted a chariot of war, was not distracted with the care of directing the horses. He had always a charioteer with him, who acted that part. The horseman has not this advantage. His attention must necessarily be divided between the care of fighting, and that of managing his horse.

Notwithstanding this, I imagine, that in some countries, such as Palestine, Arabia, Egypt, &c. which were soon civilized, they would not be long before they got on horseback, and consequently they might make use of cavalry in battle in very ancient ages. We see in Genesis, that the art of riding must have been known in Palestine in the days of Jacob ^f. This art too was practised by the Arabians in the age of Job ^g. I have already said, that I believe Job to be cotemporary with Jacob, and that he lived in Idumea on the confines of Arabia ^h. With respect to Egypt, it was in this country, if we will give credit to profane historians, that riding was invented. They differ only about the epocha of this invention. Some attribute it to Orus the son of Osiris ⁱ; and, by that means, place it in the remotest ages. Others give the honour of it to Sesostris ^k, who did not reign till after the ages, whose skill in the military arts we are now examining ^l. It is not easy to determine which of these two opinions are best founded. It seems to me, however, more likely to be true, that Orus was the inventor of riding. This opinion is supported by an ancient tradition preserved by Plutarch ^m. Besides, is it to be imagined, that the Egyptians, whose inventions of all kinds are so ancient, should have remained to the reign of Sesostris, without discovering the principal purpose the horse is capable of serving? In fine, we see, that, in the days of Jacob, they had horses in Egypt, and were accustomed to ride them ⁿ. Diodorus informs us also, that the kings of Egypt, the predecessors of Sesostris, bent their whole thoughts to keep a

^f Chap. 49. v. 17.

^g Chap. 39. v. 21. &c.

^h See our dissertation.

ⁱ Dicæarchus apud Schol. Apol. Rhod. l. 4. v. 275.

^k Id. ibid.

^l See part 2. b. 1. chap. 3.

^m See t. 2. p. 358.

ⁿ See Gen. c. 49. v. 17. c. 50. v. 9.

great number of horses. With this view, they had built a hundred stables for 200 horses each, on the banks of the Nile, between Thebes and Memphis *. We may add to all this, that it is not probable, that cavalry were introduced into battles immediately after the invention of riding; yet we must admit this, if we adopt the opinion of those authors who attribute the invention of this art to Sesostris, since all historians agree that he had cavalry in his armies †. Nothing, therefore, hinders us to believe, that, towards the conclusion of the period we are now inquiring into, some nations might make use of cavalry in battle, though at the same time we must remark, that anciently the chariots were the principal strength of armies, and much more generally used than cavalry. We shall see some striking proofs of this, in the second part of this work.

The first arms that men used, would be such as stones, sticks, the horns of animals, &c. After some time they thought of hardening their sticks in the fire, and sharpening them. This sort of defensive arms ‡ has been, and still is used in many countries §. It was not long before they begun to cut pieces of wood into the form of clubs; a kind of arms very common in ancient times ¶, and still used by several nations **. I imagine likewise, that in the first ages they might fight with axes. With these the writers of antiquity commonly equipped their heroes. These were formerly, and are at present, the principal arms of several nations. The cutting part of these hatchets was not originally of metal. In the

* L. 1. p. 55.

The ruins of these stables were to be seen in Diodorus's time.

† Diod. l. 1. p. 64.

‡ See Lucret. l. 5. v. 1283. &c.; Horat. *serm.* l. 1. sat. 3. v. 100. &c.; Diod. l. 1. p. 28. l. 3. p. 194.; Hygin. *fab.* 274.; Plin. l. 7. *sect.* 57. p. 415.; Palæphat. in *Chron. Alex.* p. 45.; Cedren. p. 19.

§ Herod. l. 7. n. 71.; Strabo, l. 3. p. 255. l. 17. p. 1177.; Suid. t. 1. p. 90.; *Conq. du Perou*, t. 1. p. 76.

¶ *Voyage de Dampier*, t. 2. p. 143.; *Rec. des voyages de la campagne des Ind. Holl.* t. 4. p. 563.

** Diod. l. 1. p. 28.; Palæphat. in *Chron. Alex.* p. 45.

Lettr. édif. t. 20. p. 134.

first ages they were unacquainted with the art of procuring metals from the earth, and working them. The most ancient hatchets were armed with sharp stones ^a, as those of the savages are at present ^x. The lance and pike may be named among the arms that were first invented. The use of them was very ancient and universal.

Those arms which have been mentioned, were proper only for close fighting. Men soon endeavoured to find out methods of annoying their enemies at a distance; and it was not long before they invented arms proper for that purpose. I know no arms of this kind so ancient and so universal as bows and arrows. Ishmael, it is said in scripture, was an expert archer ^z. Esau took his bow and quiver, and went to the field ^a. We find bows and arrows among the wildest and most ignorant savages, even in the islands most distant from the continent. These arms at the beginning would be but clumsily made. The arrows would be pointed with hard wood, flints, the sharp bones of beasts or fishes ^b, as they are at present among several savage nations, who are ignorant of the art of working metals ^c.

I do not find that the sling was so ancient as the bow and arrow, though the invention of it seems more obvious and easy. The sling is far less complicated and artificial; and yet I cannot discover that it was either so anciently or so universally used as the other ^d. Job is the only writer, in those distant ages, who makes mention of the sling ^e. The ancients ascribed the invention of it to the Phœnicians ^f.

As men became more knowing and civilized, they invented

^a See *supra*, b. 2. p. 78. & ch. 4. p. 140. 141.

^x *Ibid.* p. 141. & 156.

^z Gen. c. 21. v. 20.

^a *Ibid.* c. 27. v. 3.

^b Tacit. de mor. Germ. n. 46.; Herod. l. 7. n. 69.; Photius, p. 1333.; Bibl. anc. & mod. t. 22. p. 24.

^c Lettr. édif. t. 1. p. 132. t. 7. p. 43.; Recueil des voyages au Nord, t. 8. p. 175.; Hist. de la Virginie, p. 313.; Voyage de Dampier, t. 1. p. 94.; N. relat. de la France equinox, p. 169.

^d See l'Escarbot, hist. de la N. France, p. 853.

^e Chap. 41. v. 19.

^f Plin. l. 7. sect. 57. p. 415. See also Strab. l. 3. p. 255.

new kinds of arms, or improved the old. At last they found out the art of working metals. It was natural to apply this discovery to the advancement of the military art. Swords and fabres were then invented, arms which have never been known to any but civilized nations, and to which the savages still continue strangers. Profane historians attribute the invention of the sword to Belus ^a, King of Assyria, and father of Ninus ^b. But not to mind these vague uncertain traditions, we see from scripture that the sword was known in Asia in the remotest ages. Abraham took his sword to sacrifice Isaac ^c. Simeon and Levi entered Sechem sword-in-hand, to slaughter its inhabitants ^d. These first swords, as I have endeavoured to prove elsewhere, were of copper and not of iron ^e.

It is not enough to know how to attack our enemy with advantage; it is also necessary to know how to secure ourselves from his attacks. At first men would make the same things serve for defensive arms, which served to defend them from the injuries of the air. The skins of animals answered both these purposes ^f. The first kings of Egypt dressed themselves for war in the skins of bulls and lions ^g. We may remark likewise, that all the ancient heroes are represented in this kind of warlike dress. By and by more proper and effectual means of defending the body were invented, means which were equally commodious and secure. The shield, the helmet, and the cuirass, are the defensive arms which we know were used in ancient times. But we cannot discover in what country or at what time these different pieces of armour were invented. We know only that they are of very great antiquity ^h. I imagine, further, that the shield was the most ancient and the most universally used, because it is used by the savages, who know nothing of the helmet or the cui-

^a Hygin. fab. 274.; Cassiodor. var. l. 1. ep. 30. p. 15.

^b See Voss. de idol. l. 1. c. 24. p. 68. col. A.

^c Gen. c. 22. v. 10.

^d Ibid. c. 34. v. 25.

^e *Supra*, b. 2. chap. 4. p. 157.

^f See Diod. l. 1. p. 21. & 28.; Feith. antiq. Hom. l. 4. p. 463.

^g Diod. l. 1. p. 21.

^h See Job, c. 39. v. 23. c. 41. v. 6. & 17.

first ages they were unacquainted with the art of procuring metals from the earth, and working them. The most ancient hatchets were armed with sharp stones ^a, as those of the savages are at present ^x. The lance and pike may be named among the arms that were first invented. The use of them was very ancient and universal.

Those arms which have been mentioned, were proper only for close fighting. Men soon endeavoured to find out methods of annoying their enemies at a distance; and it was not long before they invented arms proper for that purpose. I know no arms of this kind so ancient and so universal as bows and arrows. Ishmael, it is said in scripture, was an expert archer ^z. Esau took his bow and quiver, and went to the field ^a. We find bows and arrows among the wildest and most ignorant savages, even in the islands most distant from the continent. These arms at the beginning would be but clumsily made. The arrows would be pointed with hard wood, flints, the sharp bones of beasts or fishes ^b, as they are at present among several savage nations, who are ignorant of the art of working metals ^c.

I do not find that the sling was so ancient as the bow and arrow, though the invention of it seems more obvious and easy. The sling is far less complicated and artificial; and yet I cannot discover that it was either so anciently or so universally used as the other ^d. Job is the only writer, in those distant ages, who makes mention of the sling ^e. The ancients ascribed the invention of it to the Phoenicians ^f.

As men became more knowing and civilized, they invented

^a See *supra*, b. 2. p. 78. & ch. 4. p. 140. 141.

^x *Ibid.* p. 141. & 156.

^z Gen. c. 21. v. 20.

^a *Ibid.* c. 27. v. 3.

^b Tacit. de mor. Germ. n. 46.; Herod. l. 7. n. 69.; Photius, p. 1333.; *Bibl. anc. & mod.* t. 22. p. 24.

^c Lettr. édif. t. 1. p. 132. t. 7. p. 43.; Recueil des voyages au Nord, t. 8. p. 175.; Hist. de la Virginie, p. 313.; Voyage de Dampier, t. 1. p. 94.; N. relat. de la France equinox, p. 169.

^d See l'Escarbot, hist. de la N. France, p. 853.

^e Chap. 41. v. 19.

^f Plin. l. 7. sect. 57. p. 415. See also Strab. l. 3. p. 255.

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^e *Supra*, b. 2. chap. 4. p. 157.

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^g Diod. l. 1. p. 21. ^h See Job, c. 39. v. 23. c. 41. v. 6. & 17.

rafs. I might add, that it is the only piece of defensive armour mentioned in the books of Moses ^p. The Egyptians claimed the honour of this invention ^q.

In all ages, men have adapted their own arms to those of their enemies. Every one endeavoured to imitate the discoveries of his neighbour. A nation which invents new arms, or a new way of fighting, can enjoy them alone but a little while, and can derive but a momentary advantage from them. Nations in making war have instructed each other, and borrowed from each other the arts of defence and of attack.

It is difficult to comprehend how armies were subsisted in ancient times. We do not find that they had the precaution to form magazines of forage and provisions. I imagine that each soldier carried a quantity of provisions sufficient to subsist him for a certain time. We know that this was the practice of the Israelites ^r, the Greeks ^s, and Romans ^t. This custom, it appears, prevailed in the days of Moses, and probably before. The scripture tells us, that when the Israelites went out of Egypt, they took meal, and putting it in their cloaks, laid it on their shoulders ^u. It is probable this had been their practice in former times when they went to war. Each soldier carried his own provision of corn or meal. In these distant ages every one used to grind his own grain, either between two stones, or in small hand-mills. They baked their bread, not in ovens, but under the ashes, or on flat stones or plates of metal. This is still the practice all over the east ^x. Besides, the first men led a very abstemious and frugal life. It was then much easier to subsist armies than it is at present. The savages of America furnish more than

^p Deut. c. 33. v. 29.

^q Plato in Tim. p. 1044. D.

^r 1 Sam. c. 17. v. 17. See Calmet, t. 8. p. 512.

^s Suid. voce "Εχοντας σιτί, t. 1. p. 930.; Schol. Aristophan. ad Equit. v. 1077. p. 219.; ad Acham. v. 196. p. 243. v. 1096. p. 274.

^t Cæsar, de bello Gall. l. 1. n. 4.; T. Livius, l. 44. n. 2. l. 43. n. 1.

^u Exod. c. 12. v. 34.

^x See *supra*, b. 2. ch. 1. p. 103. & 104.

sufficient

sufficient proof of this ^y. Let us add, that their campaigns, as I imagine, were not long. They made war with great quickness and impetuosity. There were then no places of strength to stop the progress of an army. A single victory laid an immense country open to the conquerors. They seized on every thing, especially on all provisions ^z.

With regard to forage, the ancients had no occasion to give themselves much trouble, as they had no cavalry in their armies, as these armies were not numerous, nor incumbered with much luggage. Even when they began to make use of horses in war, their maintenance would not give them much trouble. As the cavalry in the ancient armies were but few, they would always find sufficient forage in the fields.

As to incampments, we cannot speak with certainty about them. We know not what was the practice of the first ages in this particular. We see that the use of tents was exceeding ancient. The patriarchs had no other habitations ^a. They might therefore make use of tents very early in military expeditions. But does it follow from thence, that in the ages we are now speaking of, they knew the art of forming a camp, that is, of posting themselves to advantage, of pitching their tents in lines, of intrenching? &c. This is what I dare not affirm. Xenophon says, that the nations of Asia surrounded their camps with very deep ditches, and sometimes even fortified them with strong palisadoes ^b. But the ages of which that author wrote, were so long posterior to those we are now examining, that we can hardly gather any thing from him, concerning the primitive customs of the nations he speaks of.

One thing which has always distinguished civilized nations from savages, is, that the former knew how to join military discipline to natural courage, to obey their commanders, keep their ranks, and restrain the sallies of rash impetuous fury.

^y See le voyage de Frezier, p. 57. & 62. ; Mœurs des sauvages, t. 2. p. 247.

^z See Gen. c. 14. v. 11.

^a Gen. c. 9. v. 21. c. 12. v. 8. c. 13. v. 18.

^b Cyrop. l. 3. p. 80.

We can say nothing concerning their manner of drawing up their troops in the primitive ages, nor of the order they observed in battle. Originally the tactic art had no fixed principles; they engaged in a tumultuary manner, without rule, order, or discipline. Military ranks of command were not then instituted. It is also probable, that they had no idea of standards or colours^c. But experience would soon make them sensible how dangerous a thing it was to have no other guide in battle but blind impulse. They would presently discover, that many precautions were necessary to be taken to secure success. These reflections produced the several evolutions, and other military arts practised by civilized nations. It then became necessary to chuse a certain number of persons, to direct the several movements of an army, to give the necessary orders, and see them executed. I know not at what time the custom was introduced of dividing troops into different bodies, and putting a certain number of men under the command of a certain number of officers. I find frequent mention in scripture of the general of the army of Abimelech. This prince reigned in Gerar in the days of Abraham^d. I see likewise, that from before Joseph's time there was a commander in chief of the army in Egypt^e. But I find no where any mention of inferior officers, and I doubt very much whether the different subordinate military ranks were instituted in the ages now under our consideration.

I cannot say this of colours and military ensigns. Every thing inclines us to think that these standards for guiding the troops in battle, for directing them how to rally, and to know each other, were very early invented. We know not indeed in what age or in what country these were first used, but the use of them must have been extremely ancient. We see, that the Israelites, in the wilderness, marched in different divisions, every one, it is said, under the standard and ensign of his own tribe and company^f. It is probable, that Moses had learned the use of standards from the Egyptians, who had

^c See Diod. l. 1. p. 96. 97. & 100.^d Gen. c. 21. v. 22.^e Ibid, c. 39. v. 1.^f Num. c. 2. v. 2.

been

been acquainted with them in the remotest ages ^c. Besides, this invention seems pretty obvious, and would not require very deep reflection. It is not, as we see, unknown to the savages ^d.

The use of instruments of martial music, as trumpets, clarions, &c. was extremely ancient, and the idea of them very natural ^e. The first man who happened to blow into a reed, a horn, or large shell, would be struck with the sound. It would presently occur, that this discovery might be of great use in war, either for publishing the orders of the general, and acquainting the troops with what they had to do, or even for animating them to battle. The first instruments of martial music would be large reeds, pieces of hollow wood, big shells, the horns of animals, &c. All these kinds of trumpets anciently were ^f, and still are used in several countries ^g. This discovery would be gradually improved, by imitating, in metal, the structure of those natural bodies, which, by blowing into them, gave a loud alarming sound. It was in this manner the trumpet was invented. I shall not take the trouble to mention the uncertain traditions of profane authors about the invention of this instrument. I believe it to be much more ancient than they make it. It is spoke of in Job ^h, as an instrument already used in war, and employed in sounding the charge ⁱ. It is said also, that Moses commanded two trumpets to be made of beaten silver ^j. This is sufficient to shew the great antiquity of this instrument. I shall only observe further, that trumpets in ancient times were most com-

^c See Diod. l. i. p. 100. 101.

^d Mœurs des sauvages, t. 2. p. 199.

^e Job, c. 39. v. 24. 25.

^f See Varr. de ling. Lat. l. 4. p. 19. voce Arma.; Virgil. Æneid. l. 6. v. 171.; Strab. l. 15. p. 1041. C.; Hygin. fab. 235.; Opuscul. mythol. p. 122.; Anciennes relations des Indes & de la Chine, p. 3.; Hist. des Incas, t. i. p. 187.; Schol. Hom. ad libr. 18. Iliad. v. 219.; Potter, archæolog. Gr. l. 3. c. 9. p. 480.

^g Voyage de Frezier, p. 57. & 60.; Rec. des voyages de la compagn. des Ind. Holland. t. 4. p. 310.; Voyag. de Jean de Lery, p. 336.; Hist. gen. des voyag. t. i. p. 14.; Mem. de Trev. Novembre 1714. p. 1962.

^h Chap. 39. v. 24. 25. ⁱ Id. ibid.

^j Num. c. 10. v. 2. c. 31. v. 6.

monly made of copper ^r, a metal which gives a very piercing sound.

Drums, which are used at present by all nations, do not appear to me to have been so ancient as trumpets. We find certain traditions, however, in some authors which seem to contradict this opinion ^q; but they are blended with so many fables, that they do not appear to me sufficient to authenticate a fact, of which we find no other vestiges in all antiquity. Let us now say a few words of that part of the military art which relates to the defence and the attack of places.

I imagine, that men, in the very first ages, might have some notions of the manner of fortifying and defending places. Nature has pointed out the art of fortification. In all countries, we meet with some places of such a situation, as to enable a small number of troops to resist a much superior force. They must have soon perceived the great use that might be made of such strong posts, to defend the entrance into a country, to retire to in case of inferiority of force, or of a defeat. These first observations would lead them to the art of fortifying places. They would soon endeavour to secure towns and cities from invasions. These were originally open and without defence. Nothing obstructed the entrance of a victorious army. Such, for example, in all probability, were the cities of Sodom and Gomorrah, in the days of Abraham. For we find Chedorlaomer entered, and plundered them immediately after his victory over the kings of Pentapolis ^r.

By degrees, methods were found to render cities defensible. In the first ages, no doubt, they contented themselves with digging a broad and deep ditch round about them; the earth being thrown out on the side towards the place, formed a kind of rampart. After this they began to think of surrounding them with walls. These precautions would be sufficient, in the first ages, to defend cities from

^r Virgil. *Aeneid*. l. 6. v. 165.

^q Diod. l. 2. p. 152.

^r Gen. c. 14. v. 12. 11. et 16.

the first efforts of a victorious enemy. For in these times they must have been very ignorant in the art of besieging places. In all ages, the arts of defence and of attack of places have been proportioned to one another.

As wars became more frequent, the arts of defending and of besieging cities would be reciprocally improved. Several methods would be successively invented. But this is not the proper place to mention them. I do not imagine, that this part of the military art had made any great progress in the ages now under our consideration.

I acknowledge there is a great deal said in the histories of Ninus and Semiramis, of the grandeur and beauty of the fortifications of Bactria, and of the long defence which that city made^r. But this, I am persuaded, ought to be ranked in the number of those fables with which Ctesias and other Greek writers have incumbered the histories of Ninus and Semiramis. This is the only example of this kind to be found in the history of the ages we are now examining, in which there is not one word said of sieges, or any thing that has relation to them. I do not, however, pretend to infer from thence, that all means of defending places were then quite unknown, but only that this art was very imperfect. The rapidity of the conquests of Osiris, Bacchus, the Titans, and even of Ninus and Semiramis, is a proof of this. Could these princes, in the short space of a few years, have subdued such an immense tract of country, if the art of fortification had then been brought to any tolerable degree of perfection? They must often have met with places which would have retarded the rapidity of their progress. I am persuaded, therefore, that there were then but very few fortified cities, and that the fortifications of these few were very imperfect. We shall see reason to be convinced of this, when I give an account of the conquests of Sesostris, in the second part of this work^r.

This, I imagine, is almost all that can be said at present on the military art. I shall only propose a few reflections

^r Diod. l. 2. p. 113. 119. ^r B. 5. chap. 1.

on the spirit with which they made war in these first ages, and the way in which conquerors used their victories.

All the remaining monuments of antiquity shew, that these first wars were carried on with extreme fierceness and barbarity. They plundered and laid waste towns and countries, nothing was spared. Nations at war aimed at nothing less than the entire destruction and extermination of each other. This cruel rage put them upon poisoning their arrows; a horrid practice, which never could have been invented or admitted but by the most savage nations, in the most barbarous ages, such as those of which we are now treating^u. The consequences of their victories were as horrible as their battles. They massacred and cut the throats of whole nations^x. Sovereigns were no more respected than the lowest of their subjects. Through the fabulous tales and extravagant exaggerations which disfigure the history of Ninus, we may still discern the cruel sanguinary spirit which reigned in the wars of these primitive ages.

Ninus attacks, defeats, and takes the King of Babylon. How does he use his victory? He puts the captive monarch and all his children to death. He then turns his arms against the Medes, and conquers them. Their King is taken; the cruel Assyrian crucifies him, his Queen, and their seven children^y. That which we now call the law of nations, a law sacred and inviolable, both in peace and war, was quite unknown in these primitive times. The mildest treatment which a conquered nation could hope for, was to be carried into captivity^z.

It is in the abuse which these first conquerors made of their victories, we must look for the origin of the law of slavery, that odious law which we find established in an antiquity almost immemorial^a. I have said, that originally they gave no quarter to the conquered. But covetousness, which finds a place in the most fierce and cruel bosoms, came to the assistance of

^u See Job, c. 6. v. 4. according to the Hebrew.

^x Gen. c. 14. v. 5. 6. 7. ^y Diod. l. 2. p. 114.

^z See Gen. c. 14. v. 14. c. 31. v. 26.

^a Gen. c. 17. v. 12. and 23.

humanity.

humanity. Conquerors began to discern their true interest, and the best uses they might make of their victories. They considered, that instead of butchering their conquered enemies, it would be better to make them slaves, and to employ them in such labours and drudgery as they thought proper. By this means they procured themselves real and solid advantages. Besides, they could sell their prisoners, when they had a greater number than they thought proper to keep *. Thus avarice put a stop to slaughter and bloodshed. The same principle, together with ambition, prevented the devastation of countries. Conquerors became sensible, that the acquisition of kingdoms would be of no value, if they entirely ruined them.

Men cannot always live in a state of war. After some time, it becomes necessary to lay down their arms, and put an end to hostilities. The first treaty of peace was owing to this mutual imbecillity of two contending nations. Necessity made them both think of the means of procuring tranquillity. They agreed at last to terminate their disputes by a solemn treaty, which might regulate their mutual pretensions, restore union and concord, and secure the peace of both nations. We have examples in scripture of such treaties of peace made in the most ancient times. We even see, that in these ages they knew how to take measures for preventing future animosities and disputes ^b. Their manner of making these solemn deeds in these times, deserves to be described.

The public good required, in all ages, that the memory of treaties of peace and alliance should be preserved. I have taken notice in the preceding books, that the art of writing was unknown in the first ages. I have given an account likewise of the methods which were invented originally to supply this defect, and ascertain the tenour of public deeds. We have seen that all agreements were then transacted in the presence of witnesses ^c. But in solemn transactions, such as

* *Vendere cum possis captivum, occidere noli : Serviet utiliter.* Hor. epist. l. i. ep. 16. v. 69.

^b Gen. c. 21. v. 22. &c. c. 26. v. 26. & 29. &c.

^c B. I. p. 27. & b. 2. chap. 6. p. 189.

treaties of peace or alliance, besides witnesses, they observed certain formalities, equally proper to ascertain their authenticity, and perpetuate their memory. They set up an altar, planted a grove, erected monuments of stone, sacrificed victims, gave a commemorative name to the place where these transactions had passed, &c. Both scripture and profane history furnish several examples of these primitive practices.

On a certain occasion, Abimelech, King of Gerar, came to Abraham, and required of this patriarch to swear by the name of God, that he would not hurt his posterity, or do any injury to his subjects. Abraham promised all this, but then complained to Abimelech of the violent manner in which his subjects had deprived him of a well which he had dug. Abimelech declared his ignorance of what had been done. Abraham then makes an alliance with Abimelech, and taking seven sheep, he gives them to that prince, saying, "Thou shalt take these seven sheep of my hand, that they may be a witness unto me, that I have digged this well ^d." Moses adds, that they called the place where this alliance was made, *Beersheba*, that is, *the well of the oath*, because Abraham and Abimelech had there contracted and sworn mutually an alliance.

When Jacob made an agreement with Laban, the scripture says, he took a stone, and having set it up for a monument, he ordered his people to bring other stones, which being formed into a heap, Laban says to Jacob, "This heap and these stones shall be a witness between me and thee." Laban called this heap of stones, *The heap of witness*, and Jacob called it *The heap of witnessing*; each, it is said, according to the idiom of his own language. The place was thence forward called *Galeed* ^e.

These primitive customs continued a long time, even after the invention of writing. Homer furnishes a proof of

^d Gen. c. 21. v. 22. See also c. 26. v. 15. 18. 20.

A well was not a trifling matter in these countries where water was extremely scarce, and not to be come at without much difficulty and labour. Wells were very valuable estates to people whose whole wealth consisted in their cattle.

^e Gen. c. 31. v. 44. &c.

this in his account of a treaty of peace between the Greeks and Trojans.

The Greeks and Trojans being ready to engage, proposed to terminate their differences, by a single combat between Paris and Menelaus. They stipulate the conditions on each side, according to the event of the combat. Priam and Agamemnon advance into the middle, between the two armies. Lambs are brought for sacrifices, and wine for libations. Agamemnon cuts a lock of wool from the head of the lambs. The Greek and Trojan heralds give some of it to the chiefs of each army. Agamemnon proclaimed the conditions of the treaty with a loud voice. The lambs were sacrificed, the libations made, and thus the agreement was ratified without any further formalities^f. These methods were sufficient to authenticate treaties of peace in these remote ages, when the articles of them were few and plain. I do not know whether they were more religiously observed then than they have been since.

Having thus discussed the several particulars that have any relation to the military art, it may not, I think, be improper to stop a moment, to consider what must have been the consequences of wars and conquests in these primitive times, and what changes must have resulted from them, in the circumstances and condition of the several nations of the world.

Though history affords us but little light into the events which happened in the ages we are now considering, yet we may discover, that there were some very considerable and extensive empires formed even in these times. Chedorlaomer, Ninus, and, no doubt, several other conquerors whose names and victories have not been handed down to us, extended their authority over several countries, and united various cities and kingdoms under their dominion, even in these first ages after the deluge. It is not only on account of the progress of the military arts, that these conquests merit our attention; we ought, I will say it, to consider them in a more general, and much more interesting point of view.

^f *Iliad*. l. 3. v. 86. &c.

When we reflect on the various evils which flow from war, we cannot but look upon it as one of the most terrible calamities that afflict mankind. Yet we must acknowledge, that much good has resulted from this great evil. Wars, and the revolutions which they have occasioned, have mingled mankind together, and blended their sentiments, manners, and languages a thousand different ways. This has been of infinite advantage to the world : by this means knowledge has been increased and propagated, and discoveries have been multiplied. Conquests, by uniting many nations under one sovereign, have formed great and powerful empires, out of the ruins of many petty states. In these great empires, men began insensibly to form clearer views of politics, juster and more salutary notions of government. Experience taught them to avoid the errors which had occasioned the ruin of the nations whom they had subdued, and put them upon taking measures to prevent surprises, invasions, and the like misfortunes. With these views they fortified cities, secured such passes as might have admitted an enemy into their country, and kept a certain number of troops constantly on foot. By these precautions several states rendered themselves formidable to their neighbours, and none durst lightly attack powers which were every way so respectable. The interior parts of such mighty monarchies, were no longer exposed to ravages and devastations. War was driven far from the centre, and only infested the frontiers. The inhabitants of the country and of the cities began to breathe in safety. The calamities which conquests and revolutions had occasioned, disappeared ; but the blessings which they had produced, remained. Ingenious and active spirits, encouraged by the repose which they enjoyed, devoted themselves to study. It was in the bosom of great empires, the arts were invented, and the sciences had their birth *.

* See *supra*, b. 2. chap. 3. p. 139. ; and b. 3. chap. 6. p. 272. &c.

B O O K VI.

Of Manners and Customs *.

TH E ways of thinking, and customs peculiar to a people, are derived, partly from the climate in which Providence has placed them, partly from the

* Of all the subjects we have had occasion to speak upon, there is none more curious and interesting, than this of manners and customs: and at the same time, there is none of which it is more difficult to give a clear and precise definition. These words, *manners*, *customs*, *usages*, excite ideas in our minds more easily felt than expressed. I imagine, however, that we may understand by the manners of a people, their way of judging on the morality of human actions; and the principles which they constantly follow, with regard to vice and virtue. What is morality but the science of manners, that is, of those principles which form the heart to virtue, and of those actions which are agreeable or contrary to that sacred and immutable order which ought to regulate our whole conduct? It must be owned that all the nations of the world have agreed pretty well on this important article. The fundamental principles of morality do not seem to have been affected by those prejudices which arise from difference of genius, climate, and government.

Customs, again, are certain habitudes and practices in the common affairs of civil life, certain rules which direct the external deportment of a people either in their public appearances, or their domestic œconomy. In this book, therefore, I consider these two objects in one point of view, which in philosophical precision are very distinct.

But whatever real difference there may be between manners and customs, these two words in many languages are almost synonymous. *Manners* in English, *mœurs* in French, *mores* in Latin, *costumi* in Italian, *costumbres* in Spanish, signify equally *manners* and *customs*. In Greek, all the difference between ἠθός, *manners*, and ἔθος, *customs*, consists in one letter. It would be easy to prove, that originally ἠθός had both these significations. This affinity, no doubt, arises from hence, that, in all ages and countries, manners have had a great influence upon customs, and customs upon manners. It has even been very long before several nations had any manners, properly so called. I shall use these two words, therefore, *manners* and *customs*, indifferently, without restricting myself to a strict philosophical precision. It would be very difficult, if not impossible, to distinguish precisely what belongs to manners, and what to customs, in speaking of nations, in these ages, which had but confused notions of both.

degrees

degrees of knowledge they have possessed in each period, and partly from various accidental and temporary causes. Accordingly, we may often observe a very visible difference between the manners of a nation in one age and in another, and sometimes even in the same age. There are, however, a great number of ancient customs which have been established, we cannot well tell, either how or wherefore. Time has successively abolished or confirmed them, and it would be almost as difficult to give a reason for the new customs as for the old. Such changes indeed were not very frequent in the first ages: in general, we may perceive in them a great constancy of manners and uniformity of customs. The several nations whose ancient history has come down to us, may have varied, however, in this particular, in so long a course of ages.

It is in vain to look for settled maxims of conduct, or consistent principles of morality, but among civilized nations. It was the reunion of families, which gave birth to the manners and customs of all the different nations of the world. I have said elsewhere, that the first laws were established by tacit agreement. It was the same with the manners and customs of civil life. As soon as a society was formed, the members which composed it, tacitly agreed to observe such or such principles of morality, to follow such or such modes in their external deportment. But if it is easy to assign reasons for the establishment of the greatest part of the primitive laws, it is as difficult to explain the motives which made the first societies adopt a number of customs which appear directly contrary to reason and good sense. They seem to have been dictated by mere caprice and whim. For this reason, it is in this particular of customs and manners, that nations, even the most civilized, differ the most sensibly. We see the same custom, the same rule of behaviour, alternately approved in one country, and condemned in another. In one place, such an action is condemned as a capital offence against good manners, in another place it is countenanced and recommended. What would be the most shocking rudeness in one country, is the highest refinement of politeness in another. I shall not
pursue

pursue this parallel any further, though it might be carried on almost without end.

But amidst that prodigious variety of customs which characterize different nations, we may still perceive a pretty general agreement on some particular subjects. I do not design to quote any of the great fundamental principles of morality, ingraven on the hearts of all men by the Supreme Being, and without which no society can subsist; I speak only of those customs which affect nothing but the common intercourse of civil life. There are some of these in which all nations seem to agree. For example, in all ages, and in all countries, not excepting even the savages, it has been a custom to distinguish the two sexes by their different garbs. There have been likewise, in all times and places, certain exterior ornaments and decorations to distinguish persons invested with high dignities, and to render them conspicuous. The keeping solemn festivals on some particular occasions, is a custom which has always and every where prevailed. But for one of these customs which are common to all nations, and may be easily accounted for *, we meet with a multitude of others, so various and whimsical, that it would open a boundless field for speculation, if we attempted to discover their causes. But this is no part of my design. My intention is, to relate the peculiar manners and customs of the several nations whose history falls within the compass of this work, and to represent them such as they have been, in the several periods into which it is divided.

The manners of a nation, without doubt, is the most interesting part of its history. We cannot give a fair representation of these, without carefully studying what has been in each period its prevailing genius and moral character, that is, what have been its sentiments of virtue and vice, of the point of honour, of the rites and ceremonies of civil life. Their domestic life, their manner of conversing together in society,

* These customs, common to all ages and nations, confirm what Moses has said of the creation of the world, and strongly prove that all its inhabitants are descended from one and the same family.

the forms of their politeness, their public and private amusements, must also be described. In a word, it will be necessary to examine, in every period, in what degree the arts administered to the necessities, the recreations, and the luxuries of life.

But it is impossible to give a proper description of the manners of a people without having had a very intimate personal acquaintance with them, or having carefully studied some faithful circumstantial histories of them. This will show, how impossible it is for us at present to treat of the manners of the greatest part of ancient nations with exactness. Let us endeavour, however, to draw a slight sketch, and give some imperfect ideas of the manners and customs of those ages which are the subject of this first part of our work.

We may perceive, in general, great simplicity, little pomp, parade, and ceremony in the manners of the most ancient nations. Some writers have bestowed prodigious praises on this simplicity of life, and on that account extolled these primitive ages above all others. This is not the proper place to discuss this question, which shall be examined by and by. We shall only observe in passing, that it is easy to penetrate into the causes of this boasted plainness and simplicity. The manners of a people always bear a proportion to the progress they have made in the arts and sciences. Their way of living in the primitive ages, for this reason, must necessarily have been very simple, or rather rude, through their ignorance of those arts which procure the comforts and conveniencies of life. They could then form no idea of a sumptuous luxurious life; and were strangers to all delicacy, elegance, and refinement of manners. How could they think of gratifying tastes which then had no existence? A relish for the conveniencies and elegancies of life, is the fruit of time, and the consequence of increasing knowledge. It was experience which introduced choice and variety into life, experience which gave birth to fashion, which has extended its empire over all ages and nations. If the first men, therefore, led a parsimonious and simple life, it was not from choice and principle, but from necessity, and their ignorance of one more agreeable. For no sooner did the several

ral nations become acquainted with the arts of elegance and refinement, than they made all possible haste to enjoy them. The facts we are going to mention will, we hope, put all this beyond doubt.

C H A P. I.

Of Asia.

WE have not sufficient knowledge of the events which happened in the greatest part of Asia, in the ages we are now examining, to enable us to give an exact and full account of the manners of its first inhabitants. The holy scriptures are the only books which furnish us with any materials on this subject, and these relate only to the people of Palestine, and the adjacent countries. We must, therefore, expect much driness and sterility in this first period. We must even come down to the age of Abraham, before we can discover the faintest traces of the manners and customs which prevailed in the common affairs of life. We shall say nothing at all of the ideas they then had of morality, and the duties of society. We are totally ignorant of their sentiments on these important subjects.

I have already said, that simplicity was the distinguishing characteristic of these first ages. Their food is an evident proof of this. We find no mention of sauces, ragouts, or even of any kind of game or venison, in the description given us in scripture of the entertainment provided by Abraham for the three angels who appeared to him in the plains of Mamre. This patriarch served up to them, a calf roasted, or rather broiled, milk, butter, new bread baked in the ashes^b. This was the whole feast; a proof that their entertainments in these ages were more solid than delicate. Abraham, no doubt, designed to treat his guests in the best manner he could; and we must

^b Gen, c. 18, v. 6. &c.

remember, that this patriarch was very rich in gold and silver, flocks and slaves ^c. We may consider this entertainment provided for the three angels, as the model of a magnificent feast, and from thence judge, what was the manner of entertaining splendidly in these times.

We might be inclined to think also, that the first men must have been prodigious eaters. Is it not astonishing to see a whole calf, and almost fifty-six pound of bread, served up to three persons * ? Rebecca dressed for Isaac, two kids for one meal ^d. This circumstance is the more remarkable, as in warm countries, such as Palestine, men use much less food than in colder or more temperate climates. I should rather incline to attribute this custom of serving up such enormous quantities of meat, to the genius and manners of these times, when magnificence, it is probable, consisted in presenting their guests with much more food than they could possibly use [†].

As societies became more civilized, and enjoyed greater plenty and variety, a taste for elegance and good living was introduced. This appears from the speech of Isaac to Esau, directing him how to render himself worthy of his benediction: "Go out to the field," said he, "and take me some venison; and make me savoury meat, such as I love ^e." The sequel of this story proves still more clearly, that the art of dressing meat in various ways was then known and practised. Rebecca, who overheard this discourse, and had a mind to substitute Jacob in the place of Esau, commanded him to bring her two of the best kids: these she dressed in such a manner, that Isaac was deceived, and took them for venison ^f. The scripture adds, that Jacob presented wine to his father, and that he drank it ^g.

Moses does not give us any further information on this subject, with respect to the patriarchs. We may presume, that the luxury of the table was not carried much farther among other nations. We find no mention of eggs, or fowls, among

^c Gen. c. 24. v. 35.

* I follow the calculation of M Fleury, *Mœurs des Israélites*, § 4. p. 25.

^d Gen. c. 27. v. 9.

[†] To this day, one part of the magnificence of entertainments consists in great abundance in all countries.

^e Gen. c. 27. v. 3. 4.

^f Ibid. v. 9. & 25.

^g Ibid.

the people of these primitive times, whose history we are acquainted with; and consequently it is highly probable they did not use them.

We cannot say the same of fruits, pulse, and herbs. The patriarchs, according to all appearance, eat of these. Fruits are a kind of food so natural, that it must have been known from the very beginning. Further, among the presents which Jacob commanded his sons to carry to Joseph, to gain his favour, the scripture mentions nuts and almonds^b; a proof that these fruits were then both used, and much prized. Honey is there mentioned as one of the presents they were to offer.

As to pulse, all interpreters, and the greatest part of commentators, agree, that the meat for which Esau sold his birth-right, was a dish of lentils^c. Men could not long be ignorant of the arts of cultivating and dressing this kind of food, as I think I have sufficiently proved in the preceding books^d.

As to fish, there is no mention of it in Genesis. We cannot however, conclude, merely from the silence of Moses, that the people of Palestine did not then use it. For Sanchoniatho, who is undoubtedly one of the most ancient writers, expressly names fishing among the first inventions which people ascribed to their heroes^e.

We see, that, in the days of Abraham, it was the common practice to make two meals a-day. This patriarch entertained the angels towards noon^f; and Lot entertained them at supper, in the evening of the same day^g. It is probable they then eat in a sitting posture. The custom of stretching themselves upon beds at their meals, I imagine, was not so soon introduced.

The utensils for house-keeping, such as plates, pots, and cups, would be originally of earth or wood. As mankind improved in arts and policy, their natural taste for refinement and magnificence would begin to show itself. The discovery of metallurgy would enable them to gratify this taste. Vessels

^b Gen. c. 43. v. 11.

^c Ibid. c. 25. v. 34.

^d *Supra*, b. 2. c. 1. art. 5. p. 118.

^e Apud Euseb. præp. evang. l. 1. c. 9. p. 35. B.

^f Gen. c. 18. v. 1.

^g Ibid. c. 19. v. 3. 4.

of gold and silver would soon be substituted in the place of those of earth and wood, with which they had been obliged to take up at first. This piece of luxury was exceeding ancient. We read in Genesis, that Eliezer made Rebecca a present of vessels of gold and silver *.

It is probable, that men were a long time without the use of spoons and forks. There are still many nations who do not use them. Their fingers, and two little sticks made on purpose, supply their place. Neither did they, as I imagine, make use of plates originally. They eat upon the bark or large leaves of trees, as is still done in several countries †. The ancients had no knives. A kind of poniard which they always wore at their girdles, served them in their stead ‡.

They knew nothing of the secret of keeping their meat some time before they eat it. When Abraham entertained the angels, he brought a calf from the field, and commanded it to be killed and dressed immediately §. When Isaac desired to eat venison, he ordered Esau to take his bow and arrows, and as soon as he returned, to prepare for him a part of what he had taken ¶. Rebecca, to deceive him, instantly killed two kids, dressed and served them up †. I shall have occasion hereafter to mention this practice, which strongly represents the rudeness of these times, when I come to speak of the manners of the ancient inhabitants of Greece.

The plainness of their dress in these primitive ages, would correspond to that of their food. They were unacquainted with the art of making their garments graceful and commodious. They took a piece of cloth, longer than it was broad, and covered themselves with it, or rather wrapt themselves in it. For originally they had no contrivances to keep their garments fast about them, but by the different turns of the cloth round the body. This is the case with several nations to this day ‡.

* Gen. c. 24. v. 23.

† Hist. gen. des voyages, t. 8. p. 93.; Marc Paul, l. 3. c. 30.; Voyage de Schouten, t. 1. p. 378. & 432.

‡ See part 2. b. 6. c. 3.

§ Gen. c. 18. v. 7.

¶ Chap. 27. v. 3. 4.

† Ibid. v. 9.

‡ See Chardin, t. 9. p. 59. 60.; Voyage de Schouten, t. 1. p. 279. 414. 463.; Laet, descript. des Ind. occident. l. 6. c. 6. p. 201.; Geograph. Nub. p. 11.

By degrees, garments of a more convenient shape, and better adapted to cover the body, were invented. It appears, that the dress of the patriarchs consisted of a tunic with large sleeves, without any plaits, and of a kind of mantle of one single piece^x. They wore the tunic next the body, and threw the mantle over it, which was probably fastened with a clasp. The excessive heat of the greatest part of Asia, is the reason that its inhabitants have never given themselves much trouble about covering their legs and arms. Their shoes were only a kind of sandals, tied on with thongs. These were used in the days of Abraham^y.

It appears then, that the make of their garments was extremely simple. They required but little cutting or sewing^{*}. The fashions did not change then, and do not change to this day in the Levant. As this kind of garments fitted almost any size, the rich had always great numbers of them in store, of which they made presents. This custom prevailed in the age of Abraham. Moses mentions raiment among the presents which Eliezer made to the whole family of Rebecca^z. This is still practised in the east in our days.

Even in the patriarchal age, they studied some degree of luxury and magnificence in dress. Rebecca, the better to disguise Jacob, made him put on Esau's garments, which she kept with care. Moses says, they were very beautiful, but gives no description of them^a. Jacob, who tenderly loved Joseph, gave him a conspicuous robe, which excited the envy of his other children^b. It is somewhat difficult to determine wherein the superior excellence of this robe consisted. Interpreters and commentators are not agreed about the meaning of the Hebrew word, which Moses uses in describing it. I imagine, that the magnificence of dress then consisted in the fineness of the stuffs, the beauty and variety of colours. The Arabians, to this day, use garments of this kind^c.

^x Gen. c. 37. v. 31. c. 9. v. 23. c. 49. v. 11.

^y Ibid. c. 14. v. 23.

^{*} Such is the Arabian dress. *Mém. de Trévoux*, Septem. 1705, p. 1636.

^z Gen. c. 24. v. 53.

^a Ibid. c. 27. v. 15.

^b Ibid. c. 37. v. 3. 4.

^c *Anciennes relations des Indes et de la Chine*, p. 12.

The adorning of the person was an early study. The desire of pleasing soon taught the arts of setting off the gifts of nature by the ornaments of dress. The most savage barbarians have a kind of ornaments suited to the rudeness of their manners. In these remote ages, they were not unacquainted with the ornamental parts of dress. The scripture tells us, that Eliezer made Rebecca presents of ear-rings, and bracelets of gold for her hands ^d. These ornaments were not even confined to the fair sex. Men as well as women wore ear-rings, bracelets, and rings ^e. This custom still continues among several of the eastern nations.

It will be proper to observe on this subject, that, in the times we are now speaking of, they did not wear their rings on their fingers, as has been since the custom, but upon the backs of their hands, either tied on with a string, or made so large that they could put their hand into them. This is evident from the expressions Moses uses as often as he speaks of rings ^{*}.

We know not whether the people of Asia had any covering for the head in the patriarchal age. We see only that on some occasions the women used veils ^f. But it is impossible to give any particular description of their head-dresses, or even of their dress in general. The account I have given of the shape and fashion of their garments in these remote times, is very imperfect, because no monuments of them are remaining, and without the assistance of some representation we cannot form a clear idea of them.

We are at the same loss with regard to their manner of lodging. We know neither the outward form of their houses, nor the inward distribution of their apartments in remote antiquity; whether they were divided into different rooms, or how they dwelt in them. In general, we may imagine, that their houses were not very commodious. It is certain for one

^d Gen. c. 24. v. 47.

^e Ibid. c. 35. v. 4. c. 38. v. 18.

^{*} See Gen. c. 24. v. 47. et c. 41. v. 41. 42. where it is said, that Pharaoh took his ring from his hand, *וַיִּקַּח מִיָּדוֹ* *meak jado*, and that he put it on Joseph's hand *וַיִּתֵּן עַל יָדוֹ* *al-iad Joseph*. This is the more conclusive, that there is a Hebrew word for fingers. See F. Calmet *ad* Exod. c. 13. v. 9.

^f Gen. c. 24. v. 65. c. 38. v. 14. 15.

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thing, that the ancients had no chimneys. They warmed themselves with pans of char-coal ^a.

If we have hardly any knowledge of the houses of remote antiquity, we have still less of their furniture. We know not how the ancients sat, whether upon seats, cushions, carpets, mats, or skins. I should incline to think; that, in the patriarchal ages, they had no such thing as seats properly so called. They make no use of this kind of furniture in the east to this day, but sit upon carpets or cushions. It is probable they did the same in these remote times.

As to their beds, we can say nothing of them but from conjecture. Though they are mentioned in Genesis, no description is given how they were made ^b. We have reason to believe, that they were only a kind of couches without hangings or curtains. Afterwards they added a light pavilion over them, adorned with fine stuffs. But this was greatly posterior to the ages we are now considering.

It would be long, I imagine, before they invented the arts of ornamenting the insides of their apartments. Tapestry is not an invention of the first ages, and we may say the same of gilding and painting. We cannot speak so positively of wainscotting, and other ornaments of joiners work. The art of covering the insides of houses with wood very neatly wrought, is of great antiquity in Asia. It may possibly have had its origin in the ages which are the subject of this first part of our work.

Let us next examine the deportment of the people we are now speaking of, in the ordinary course of civil life, and collect together in one point of view, the few particulars which have been handed down to us on that subject.

It is certain, that, from the first ages, the people of Palestine and the adjacent countries had pretty just ideas of politeness, and of those mutual regards which serve to cement and sweeten human society. They saluted one another respectfully, by bending the body very low. We see too, that on some occa-

^a Jerem. c. 36. v. 22. 23.

^b Chap. 48. v. 2. c. 49. v. 32.

sions they embraced. The history of the patriarchs furnishes us several examples of these customs ¹.

They paid particular respect to strangers and travellers; not only inviting them into their houses, but presenting them with every thing they wanted. They endeavoured to load them with civilities, to prevent their requests, and give them the best of every thing they had ². As the ancients used only sandals, their feet in travelling were covered with clay or dust: for this reason, the first office of hospitality they performed to those they invited into their houses, was to present them with water to wash their feet. We see in scripture, that the patriarchs never neglected this piece of politeness ³. When the master of the house designed to pay distinguishing honours to his guests, he waited upon them himself at table. It was in this manner Abraham treated the three angels who appeared to him in the plains of Mamre ⁴. Another piece of politeness and respect which was then paid to strangers, was, to attend them some part of the way at their departure with great ceremony. Laban, among other things, reproaches Jacob for this, that, by his precipitate departure, he had prevented him from sending him away with songs of joy, and sounds of music ⁵.

They observed several other rites of decency and good manners in these first ages. For example, it was not then the custom for the women to sit at table with the men. Sarah did not appear at the feast which Abraham gave the three angels ⁶. Rebecca was not present at the entertainment her family made for Eliezer, when he came to demand her in marriage ⁷. Besides, the mens apartments were separate from those of the women ⁸, who never appeared in public without their veils ⁹. All these customs still continue in the east.

It was then the custom also, for persons of distinction to carry a staff or baton of a particular form; the same which

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¹ Gen. c. 18. v. 2. c. 19. v. 1. c. 29. v. 13.

² Ibid. c. 18. v. 7.

³ Ibid. c. 18. v. 4. c. 19. v. 2. c. 24. v. 32.

⁴ Ibid. c. 18. v. 8.

⁵ Ibid. c. 31. v. 27.

⁶ Ibid. c. 18. v. 9.

⁷ Ibid. c. 24. v. 57.

⁸ Ibid. v. 28. & 67. c. 31. v. 33.

⁹ Gen. c. 20. v. 16. c. 24. v. 65. c. 38. v. 14. 15.

After

we call a sceptre from the Greek, and which in latter ages has been the peculiar ornament of kings and sovereigns. But originally the use of it was much more general, and in ancient times every person of distinction bore a sceptre[†]. This custom is very plainly pointed out in scripture, and continued for many ages[‡]. I shall have occasion to speak of it more fully in the second part of this work.

In the ages we are now examining, it was not esteemed indecent for the mistress of the family, to dress part of the provisions. We see that Sarah baked the bread necessary for the entertainment which Abraham gave the angels[§]. Rebecca prepared a dish for Isaac, composed of two kids^{||}. Nay more; we see the children of the patriarchs employed in servile offices, which at present would appear extremely low. Jacob kept the flocks of Laban his father-in-law[¶]; and after this patriarch had returned into his own country, his children tended his flocks^{**}. Even the daughters were not exempted from these laborious offices. Rebecca went to bring water from a considerable distance, and carried a pitcher upon her shoulders^{††}. Rachel drove her father's flocks^{‡‡}. The manners of the Greeks in the heroic ages, will present us with a faithful picture of these primitive times. We must ascribe all these customs to that necessity which mankind were in originally, of every one's doing almost every thing for himself. The present practices of the savages is a convincing proof of this.

The custom of expressing grief, for the death of near relations, by external marks of mourning, has obtained in the most distant ages. The scripture takes notice, that Abraham performed the rites of mourning, on the death of Sarah^{§§}, and that Judah did not appear in public for some time after his

After all we must confess, that we do not know distinctly what was then the ordinary use of the veil. We may even perceive some sort of opposition between the customs mentioned in those passages I have quoted. It would seem from thence probable, that women did not wear their veils every time they appeared in public.

[†] Herod. l. 1. n. 95.; Strabo, l. 16. p. 1129 r. 30.

[‡] Gen. c. 38. v. 18.

^{||} Ibid. c. 18. v. 6.

[¶] Ibid. c. 27. v. 9.

^{¶¶} Ibid. c. 29. v. 18.

^{**} Ibid. c. 37. v. 12.

^{††} Ibid. c. 24. v. 15.

^{‡‡} Ibid. c. 29. v. 9.

^{§§} Ibid. c. 23. v. 3.

wife died ^d. But we do not know what the people of the east in these ages wore for mourning, nor how long it continued. It is certain that they changed their dress, and that there was a particular habit for widows. This is evident from the history of Tamar. When she designed to impose upon Judah, and make him fall into the snare which she had laid for him, she took care, says Moses, to put off her widow's garments, and put on others ^e. We do not know certainly of what kind the widow's garments then were; we can only guess at it. It appears, first, that widows did not wear veils; for Tamar put on one to disguise herself ^f. I presume too, that the fashion of these mourning-garments was different from that of their ordinary dress. When Jacob heard of the death of Joseph, he tore his garments, and put on hair-cloth ^g, or rather sackcloth, according to the Hebrew text, and Septuagint version. They probably gave the name of sacks to their mourning-habits, because they were strait and close like sacks, and no doubt of a dark and gloomy colour.

We can speak only very imperfectly of the occupations, exercises, and amusements of the first men. The keeping of flocks was, no doubt, one of their principal employments, as it was the source of their riches. Both sacred and profane antiquity attest this with one voice. It was for this reason, that the ancients, when they had any affairs to transact, repaired to the gates of cities ^h. The inhabitants being almost all shepherds or husbandmen, were obliged to go out at the gates every morning, and did not return till the evening. The gate of the city, therefore, was the place of the most public course and resort ⁱ.

With respect to their pleasures and amusements, we see that
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^d Gen. c. 38. v. 12.

^e Ibid. c. 38. v. 14.

^f Ibid.

^g Ibid. c. 37. v. 34.

^h See Gen. c. 33. v. 10. & 18. c. 34. v. 20.; Ruth. c. 4. v. 1.

ⁱ In all ages, mens way of life has determined the places of their public rendezvous. The Greeks and Romans assembled in the market, or the square, for their occupations of commerce or of pleading. Our ancestors assembled in the courts of their several barons castles. From whence came the courts of princes. In the Levant, where their sovereigns are commonly shut up in their palaces,

men in all ages have diverted themselves with singing, dancing, and playing on instruments of music. Singing supposes some kind of poetry; accordingly this sublime art is one of the most ancient inventions. I should even imagine, that poetry preceded music*, as music evidently preceded dancing. But, without determining the preference in point of antiquity, let us inquire what might be the origin of these two delightful and enchanting arts. We shall begin with poetry.

A great many conjectures have been formed concerning the origin of poetry: but none of them are fully satisfactory, or unfold the true causes which formed the first poets. I shall explain what I mean. If we will content ourselves with vague and general causes, it is easy to find the source of poetry in the various affections and emotions of which the human soul is susceptible. We see plainly, that the first truly poetical ideas must have been the offspring of a lively imagination, strongly affected. When the mind is deeply penetrated with a lively sentiment, it disdains the ordinary modes of expression. The familiar style will not satisfy; common and vulgar language would but ill express the ideas with which it is ravished and transported. Then it seeks for daring figures, bold and lively images, sublime and soaring expressions to paint the sentiments it feels. It would be soon perceived, that among the various sounds which form the different languages, some had a peculiar force and energy, some an agreeable sweetness, while others were harsh and grating to the ear. The first step therefore towards poetry would be to express strong and lively ideas in sublime and energetic language, and to clothe the milder feelings in soft and sweet expressions. They would then invent more studied and elegant turns of phrase, than those of common speech. Last of all, they would endeavour to give a certain cadence and number to their style and language. In this manner we may explain the mechanical

palaces, the people assemble at the gates of the seraglio. This custom of attending at the gates of eastern monarches, is as old as the times of the first kings of Persia, as we see from the book of Esther, c. 2. v. 19. 21. c. 3. v. 2. 3.

* I take the word *music* in its most enlarged sense.

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invention of poetry, and trace the steps of the human mind in its progress towards that invention. But when we would attempt to find out the original principle of these affections and emotions, which alone gave birth to poetry, and created poets, difficulties croud in upon us.

Poetry is not one of those arts which are communicated by one nation to another. There never was a people who had not their own poets. This talent, therefore, seems to be one of those which are essential to human nature*. Besides, poetry is employed on such an infinite variety of objects, so distant and different from one another, that it is hardly possible this art could have sprung from one origin, in all the different nations which have cultivated it. Some writers, however, imagine, that the raptures and transports of a devout and grateful heart, on contemplating the grandeur and goodness of the Supreme Being, were the first and principal sources of poetry. I am afraid that this opinion will not hold good, and doubt very much whether we shall find the origin of poetry in the sentiments of piety and gratitude to the Creator. I have said it already, and I repeat it again, that the contemplation of the admirable order and beauty of this universe must convince every reasonable and thinking creature, of the existence of one Supreme Being, the first cause and sovereign disposer of all things. But this conviction is a mature, profound, and serious sentiment, not likely, in my opinion, to inspire the first men with that enthusiasm which is the source of poetry. Besides, it is possible, that, in the state of nature, some might not attend to the proofs of a Divinity. We cannot doubt of this, if it be true, that there are still some nations who have no idea of religious worship. These nations, notwithstanding, have their poets †.

It may perhaps be imagined, that poetry was the child of love. This passion, is indeed, capable of heating the imagi-

* By poetry here I understand poetical ideas and expressions, rather than the artificial mechanism of verses.

† *Hist. des isles Mariannes* par le P. le Gobien, l. 2. p. 63. 64.; *Laet, descript. des Ind. Occident.* l. 2. c. 16. p. 56. 57.; *Hist. nat. de l'Islande*, t. 2. p. 228. 229. 232. 254.

nation, and inspiring the soul with that kind of intoxication which produces poets. But, in all appearance, the first men were too rude and brutal, to feel those tender and delicate emotions to which poetry in after ages owed its greatest beauties.

If laying aside conjectures, we consult history concerning the origin of poetry, it can give us no certain light. There we find only, that, in the most distant ages, poetry was employed by all nations, in preserving the remembrance of great and memorable events*. This fact, which is indisputable, would lead us to assign an origin to the first poetical productions, very different from any that has yet been thought of. May we not then suspect, that this kind of language owes its birth to self-love, which in all ages, and in all countries, has been for ever studying how to set off and magnify every thing which might flatter its own vanity? It will not scruple, for this purpose, to employ extravagant exaggerations, hyperbolical figures, big words, and swelling epithets. It will strain, if we may so speak, to aggrandise the objects by the energy of expressions, boldness of figures, and abuse of metaphors. The songs of the savages, which we must consider as a kind of poetry, contain nothing but the praises and exploits of their own nation, which they always exaggerate as much as possible. The inhabitants of the Marian islands, who may be ranked among the most ignorant and savage people, believed themselves, before the arrival of the Europeans, to be the only nation in the world. The fictions of their poets confirmed them in this ridiculous prejudice. They were charmed with these absurd fables, which flattered their pride, the predominant passion of these barbarians¹. It is probable, therefore, that, in the first ages, some inventive geniuses, instead of relating facts with plainness and simplicity, studied to compose their narrations in a language more singular and sublime. These compositions would charm their countrymen, because they flattered their vanity and self-love. Custom would consecrate this practice. In this manner poetry was insensibly invented, and in a little time it came to

* *Supra*, b. 2. c. 6. p. 172.

¹ *Hist des isles Mariannes par le P. le Gobien*, l. I. p. 49. 63. 64.

be used in all subjects, with which men were strongly affected.

Without having recourse to self-love, we may perhaps account for the origin of poetry, from those efforts which men would make to express in forcible and energetic terms, such events as had made lively impressions on their imaginations, or left deep traces on their memories. Possibly we may find the sources of this art in those unutterable transports which men feel in escaping from any imminent and dreadful danger. On such occasions, their joy bursts forth, and no expressions are too strong or bold to paint their raptures.

Gratitude too may perhaps have contributed to form and cherish the sublime uncommon strains of poetry. We often want words, and are obliged to stretch and fatigue the imagination, to find language to express our gratitude, for some signal benefit, and paint the sentiments of esteem and love we feel for a generous benefactor. The most ancient poem now extant, the song of Moses after the passage of the Red sea, seems to flow from all these sources^m. It was equally designed to preserve the memory of that event so happy and honourable to the Jewish nation, and to render thanks to God, for the signal protection afforded to his people on that occasion. The result of all these reflections is this, that we can affirm nothing positively concerning the true origin of poetry; and that many reasons forbid us to imagine, that it had one common origin in all the different nations of the world.

With respect to music, it may be said, that singing is natural to man. All the world, even the most barbarous and savage nations, sing. The difficulty was, to reduce the various modifications of the voice into regular and harmonious sounds. It is commonly imagined, that the variety and sweetness of the singing of birds served as a model to the first inventors of music, and that this is the more probable, as men are so much inclined to imitation. They would then endeavour to form with the voice, various inflections which might have some sort of connection and coherency. It would be easy to arrange words to these sounds. But these first essays would be but

^m Exod. c. 15.

faint imitations of that endless variety in the warbling of birds. To approach still nearer this, it was necessary to invent some methods, to make up for the imperfection of our organs. To this end they borrowed the assistance of certain bodies, naturally sonorous. They then studied the art of making them sound properly, and produce various and harmonious modulations. In this manner, by many successive trials, the first men invented wind and stringed instruments of music.

But whatever be some of these conjectures, which I confess are but little satisfactory, it is certain, that the invention of singing, and instrumental music, is extremely ancient. We have just heard, that in the days of Laban it was an established custom, to attend strangers at their departure with songs of joy, and the music of instruments. But it is particularly worthy of observation, that songs are of all countries, and of all ages. The most barbarous and savage nations, as I have already said, have some idea of singing. In our article on the origin of writing, we have seen that all the nations we know any thing of, originally preserved the remembrance of historical events in a kind of poems, which they sung^a. These songs which were handed down from father to son, supplied the place of books and histories.

I have already offered some conjectures on the invention of wind-instruments, to which I may refer the reader^o. With regard to stringed instruments, I doubt if they were invented so early as the ages we are now examining. It was long before any other instruments were known but the pipe, the flute, the trumpet, and a kind of kettle-drum, called in scripture *tympanum*. The outside of it was of copper, of an oblong figure, and covered with skin only at one end. On this they beat with drumsticks, and with the hand^p.

I imagine I may apply what I have said of poetry and music to dancing. The antiquity and universality of this diversion, is equally attested by all writers. There is no people who have not had their peculiar dances. This custom is found

^a *Supra*, b. 2. c. 6. p. 162.

^o *Supra*, b. 5. p. 303.

^p Calmet, ad Genes. c. 21. v. 27.

among the most barbarous and uncivilized nations. We may add, that anciently the dance made a part of the public ceremonies of religious worship. I shall not enlarge on the origin and the date of a diversion so natural to man. The body always obeys the impressions of the mind, and shews its feelings by its motions, gestures, and attitudes. There was nothing further to be done, but to regulate the different movements of the body, by subjecting them to a certain regular and measured cadence. This is an art which would be soon and easily invented.

Poetry, music, and dancing, were for many ages the chief, if not the only amusements of ancient nations. To these we may join feasting, which has been a custom in all times and countries. From the first ages there were some particular occasions for entertainments of magnificence and festivity. The scripture says ^a, that Abraham made a great feast the day that Isaac was weaned. Laban invited a great number of his friends to a feast, at the marriage of his daughter to Jacob ^r.

I do not know whether we ought to reckon hunting among the amusements of the first ages. This exercise is indeed at present pursued as a diversion, but it was not so in these early times. Hunting was then rather a serious occupation, than an amusement. The earth being laid waste by the deluge, a great part of it remained for a long time uninhabited. Wild beasts multiplied, and endangered not only the lives of cattle, but also of men. The first colonies found themselves under a necessity of waging perpetual war with those fierce enemies. It is for this reason, that the first founders of empires are represented as mighty hunters. This talent was then as valuable as it is now indifferent. They went to the field, not from inclination, but necessity, and, as I am strongly inclined to think, made it something more than an amusement *.

^a Gen. c. 21. v. 8.

^r Ibid. c. 29. v. 22.

* The Lord says to Moses, speaking of the Canaanites: "I will not drive them out from before thee in one year, lest the land become desolate, and the beasts of the field multiply against thee," Exod. c. 23. v. 29.

Moses tells the Israelites in Deuteronomy, that God would not destroy the Canaanites, but by little and little, lest the wild beasts of the field should rise up against them. Chap. 7. v. 22.

Notwithstanding

Notwithstanding that simplicity of manners, which is commonly ascribed to these primitive ages, I have already observed, that luxury was not unknown to several Asiatic nations in the days of Abraham. They had different kinds of jewels, and vessels of gold and silver. In Isaac's time, we find mention, not only of precious, but of perfumed garments. Such were those of Esau, which Rebecca made Jacob put on[†]. The use of perfumes and odours was therefore introduced among the people of the east, in the most distant ages. From thence we may presume, that they knew other arts of luxury, which Moses had no opportunity of mentioning. Thus it appears, that the manners of these nations were not then quite so simple as some would endeavour to persuade us.

We may remark further, that chastity does not seem to have been their favourite virtue. Not to speak of those abominations which drew down the wrath of heaven on Sodom and Gomorrah, we see that there were then common women, who prostituted themselves to all the world for hire. The adventure of Judah, and Tamar his daughter-in-law, is a sufficient proof of this. From thence we see, that Tamar, the better to deceive Judah, posted herself in an open place, on the highway, by which he was to pass. This place, says Moses, and her dress and attitude, persuaded Judah that she was a harlot; they struck a bargain in a few words; he promised her a kid, and gave pledges for the performance of his word[‡]. The answer which the inhabitants of the place made to the servant Judah sent to carry her the price of her favours, shews plainly that such kind of adventures were then very common and frequent: "We have seen," say they, "no harlot in this place[§]." There must then have been a considerable number of such prostitutes, and they must have known them when they saw them, by certain marks. We are, besides, informed by Sanchoniatho, that corruption of manners was carried to a great height in these primitive times^{*}.

I shall not enlarge any further at present on the manners of

[†] Gen. c. 27. v. 27.

[‡] Gen. c. 38. v. 27.

[§] Ibid. c. 38. v. 14. 15.

^{*} Apud Euseb. præp. evang. l. 1. c. 10. p. 34. 35.

the first inhabitants of Asia. I shall have occasion to resume this subject in a distinct article, which will contain some general reflections on several historical facts relating to the predominant character of these primitive ages. It is now time to speak of the Egyptians.

C H A P. II.

Of Egypt.

THE manners of the Egyptians were very early formed. We find the greatest part of the customs spoke of by profane historians, were common at the time Joseph was carried into Egypt. From whence we may conclude, that the manners of the Egyptians were then such as Herodotus, Diodorus, and other authors represent them. This is the more probable, as, according to the testimony of all antiquity, this nation discovered much constancy in their principles, and a singular attachment to their manners and customs ^γ.

To characterize, in a few words, the manners of the Egyptians, I shall borrow the expressions of Herodotus. “As Egypt,” says that author, “is situated in a climate and watered by a river of a different nature from all other climates and rivers, so the manners and customs of its inhabitants are different from those of other nations ^z.” Herodotus is not singular in this opinion. The Egyptians seem to have attracted the attention of the writers of antiquity in general, as much by the singularity of their customs, as by the merit of their discoveries. Let us judge of this from facts.

Wheat has been esteemed in all ages, and by all nations, the most proper food for man. In Egypt it was a reproach to use it. Their bread was made of a kind of grain, which Herodotus calls *olyra* ^a, and which I imagine was rice ^b. Beans were

^γ See part 3. b. 1. c. 4. p. 24.

^z L. 2. n. 35.

^a Ibid. n. 36.

^b See Plin. l. 18. sect. 15. p. 103.

were also proscribed by the Egyptians; they neither sowed, nor eat them *. It was likewise a law observed by the whole nation, never to eat the head of any animal †. Besides, there were great differences among the Egyptians, and little uniformity, as to their daily and common food. In some provinces it was unlawful to kill sheep ‡, and they only eat goats. In other provinces it was the reverse. They were commanded by a general law to abstain from cow's flesh §. Swine were considered as impure animals, and whoever touched one of them, though but slightly, and by accident, was obliged immediately to wash himself and his cloaths in the river ¶. They were, however, permitted to sacrifice swine to Bacchus and the moon; but care was to be taken, that it was at the time of the full moon. Then they were permitted even to eat them, for that one day only ††.

The Egyptians eat fish ‡, observing nearly the same restrictions with those I have just mentioned. In general, they touched no fish that wanted scales or shells †; and even among those kinds which were allowed, they abstained from some of them in one part of Egypt, while they used them in another †.

The same may be said of birds; some of which were reputed sacred, and for that reason never touched by the Egyptians ††. This superstition reigned in Egypt long before the days of Moses †. I am of opinion, that this distinction between sacred and profane animals, belonged to the first ages of their monarchy. Further, the Egyptians, like all other ancient nations, eat their meat as soon as it was killed, and allowed it no time to become tender *.

I imagine, however, that the custom of gelding animals, to render their flesh more tender and delicate, was early known

Bread made of rice, has been, and still is used in several countries. See Athen. l. 3. p. 110.; Voyage de V. le Blanc, p. 80. & 103.; Hist. gen. des voyages, t. 4. p. 227.

* Herod. l. 2. n. 37.

† Ibid. n. 39.; Plut. t. 2. p. 363. B.

‡ Herod. l. 2. n. 42.

§ Ibid. n. 41.

¶ Ibid. n. 47.

† Ibid.

† Numb. c. 11. v. 5.; Diod. l. 1. p. 52.

* Herod. l. 2. n. 72. & 77. See Athen. l. 7. c. 13. p. 299. E.

† Plut. t. 2. p. 353. C.

†† Herod. l. 2. n. 72. & 77.

‡ Exod. c. 8. v. 26.

° See Gen. c. 43. v. 16.

and

and practised by that people; because Moses, whose intention was to wean the Israelites from the Egyptian customs, forbids to geld any animal ^r.

Beer was the common drink of a great part of Egypt ^q. There were several districts where vines would not grow. Where the soil would permit, they planted and cultivated vines, and there they drank wine. The use of this liquor was very ancient among the Egyptians, as we learn from the dream of Pharaoh's chief butler. This officer dreamed, that he saw before him a vine loaden with ripe grapes, that he pressed their juice into the king's cup which he held in his hand, and then presented it to that monarch ^r. I shall take this opportunity to observe, that the common people drank out of vessels of copper ^r, but the rich used cups of gold and silver. The cup which Joseph used was of silver ^r.

The Egyptians were extremely superstitious in their eating and drinking. They washed the vessels which they used, with the most anxious care, every day, as much, or more from superstition than from cleanliness ^s. They durst not use any utensil that belonged to a stranger, or so much as eat meat that had been cut by any other knife than that of an Egyptian ^s. Their alienation from strangers was such, that they would not sit at the same table with them. When Joseph entertained his brethren in his palace, Moses observes, that they served the Egyptians who had been invited to that entertainment by themselves; for then, says he, it was an abomination to the Egyptians to eat at the same table with strangers ^r. But this people, who had so great a prejudice and aversion to other nations, were at the same time so indelicate, that they did not scruple to eat with beasts ^s. Strange effect of superstition!

^r Levit. c. 22. v. 24.

^q Herod. l. 2. n. 77.; Diod. l. 1. p. 40. 41.

^r Gen. c. 40. v. 9 &c.; Diod. l. 1. p. 82.

This destroys Plutarch's assertion, that before Psammetichus, the kings of Egypt did not drink wine, t. 2, p. 353. B.

^r Herod. l. 2. n. 37.

^r Gen. c. 44. v. 2. & 5.

^s Herod. l. 2. n. 77.

^s Herod. n. 41.

^r Gen. c. 43. v. 32.

^r Herod. l. 2. n. 36.

There are some nations at this day guilty of the same brutality, and almost from the same motives ^a.

We see, that, in these primitive times, it was the custom in Egypt, to set before every guest his own particular portion. It was the master of the feast who cut the meat, and distributed to each his share. When they had a mind to pay a peculiar honour to any one, they sent a much larger portion to him than to the other guests. Joseph, to shew his love to Benjamin, sent five time times as much to him as to any of his other brethren ^b. This manner of testifying respect, was common to almost all ancient nations ^c.

If we may believe the ancients, the Egyptians knew not how to make ragouts, nor different kinds of sauces. Their manner of dressing their meat was very simple and uniform ^d. The Egyptians in all ages made great use of plants, roots, fruits, and pulse. The testimony of profane historians ^e on this article, is confirmed by the complaints of the Israelites in the wilderness ^f. But they had the same superstitious distinctions among these, as among animals; and did not eat all kinds of them indifferently ^g.

The Egyptians made two meals a-day ^h; the one at noon, and the other in the evening. They eat in a sitting posture ⁱ. Persons of distinction had a very singular custom at the conclusion of their entertainments. At their rising from table, a man came into the dining-room, carrying a coffin, containing a wooden figure about three feet in length, which represented a dead body, and presenting it to each of the guests,

^a Rec. des voyages de la compagnie des Ind. Holland. t. 3. p. 24.; Voyage d'Ovington, t. 2. p. 297.; Gemelli Careri, t. 1. p. 448.

^b Gen. c. 43. v. 34.

^c Diod. l. 5. p. 351. See also part 2. b. 6. c. 3.

^d Herod. l. 2. n. 77.; Diod. l. 1. p. 82. 91. 100.; Athen. l. 5. c. 6. p. 191. F.

^e Herod. l. 2. n. 92.; Diod. l. 1. p. 52. et 100.

^f Numb. c. 11. v. 5. ^g Diod. l. 1. p. 100.

^h Gen. c. 43. v. 16.

ⁱ Ibid. v. 33.; Athen. l. 5. c. 6. p. 191. F.

Some ancient monuments described by Diodorus, seem to insinuate that the first kings of Egypt eat lying on beds. l. 1. p. 59.

“ Drink,”

“ Drink,” said he, “ and take your pleasure, for this is what you must be after your death ^k.”

The dress of the Egyptians was very simple. The men wore a linen tunic, set about with fringes which reached down to the knee. Over this they had a kind of mantle made of white wool ^l. Persons of distinction wore garments of cotton ^m, with costly chains about their necks. Pharaoh commanded Joseph to be dressed in a robe of cotton, and a gold chain to be put about his neck ⁿ. The women had only one kind of dress, of which the ancients have left us no description. Herodotus says, that the men ^o had two kinds, but does not point out wherein their difference consisted. This fashion, it seems, was very ancient in Egypt. Moses says, that Joseph gave changes of raiment to each of his brethren ^p. The Egyptians were attentive to cleanliness, in my opinion, even to excess. They took great care to keep their garments exactly neat, and had them washed every time they put them on ^q.

The Egyptians commonly had their heads shaved, and cut off their hair when they were very young ^r. But, contrary to the practice of all other nations, they let their hair grow in a time of mourning ^t. This custom appears from the history of Joseph. He had let his hair grow while he was in prison. But he was shaved before they presented him to Pharaoh ^u, because, no doubt, it was not lawful to appear at court with the external marks of mourning and distress.

After these facts, which are well attested, it must appear not a little strange to find, that the Egyptians had the use of mirrors in the remotest ages. This, however, will be abundantly evident from observing how common this utensil was among the Israelites in the wilderness. Moses says, that he made

^k Herod. l. 2. n. 78.

^l Gen. c. 39. v. 12.; Herod. l. 2. n. 37. et 81. See also Exod. c. 9. v. 31. Bianchini, istor. univ. p. 556. et 567.

^m *Supra*, b. 2. c. 2. p. 120.

ⁿ Gen. c. 41. v. 42.

^o L. 2. n. 27.

^p Gen. c. 45. v. 22.

^q Herod. l. 2. n. 37.

^r *Ibid.* l. 3. n. 12.; Diod. l. 1. p. 21. 22.

^t Herod. l. 2. 36.

^u Gen. c. 41. v. 14.

the laver of brass, of the mirrors offered by the women who watched at the door of the tabernacle ^u. This great quantity must have been brought from Egypt. We must observe, that then mirrors were not made of glass; whether it was, that they knew not the art of making glasses, or, at least, the secret of foliating them. They made mirrors of all kinds of metals. Those of the Egyptians, as we learn from the passage just now quoted, were made of brass melted and polished. To this day, almost all the mirrors of the east are of metal. If we meet with a few of glass, they have been imported by the Europeans ^x.

We can speak but very imperfectly of the houses of the Egyptians. We know only, that they were exceeding high. Diodorus says, that, in the earliest ages, the houses of private persons in Thebes were four or five stories in height ^y. We can say nothing of their inward decorations, or outward magnificence. We cannot so much as form conjectures on this subject, as the ancients have been entirely silent about it. We know as little of their furniture, either as to its kinds or forms.

I am, however, persuaded, that, in the ages we are treating of in this first part, there must have been a great deal of magnificence in Egypt. I have had several opportunities of observing in the preceding books, to how great a height luxury had been carried in Egypt, in the days of Joseph. Even then they used jewels, vessels of gold and silver, rich stuffs and perfumes, and were waited upon by a great number of slaves. Joseph dwelt in a superb palace, and had a master of the household ^z. Persons of distinction were drawn in chariots. They had various kinds of these, some of them, no doubt, very magnificent ^a. Joseph was attended and proclaimed with great pomp. A herald went before the procession, and proclaimed the occasion of it to all the people ^b. In a word, the court of Pharaoh makes a magnificent and brilliant appearance. There we see a chief butler, a chief baker, a captain of the guards,

^u Exod. c. 38. v. 8.

^x Chardin, t. 2. p. 279. ^y L. 1. p. 54.

^z Gen. c. 43. v. 16. & 19. c. 44. v. 1.

^a Ibid. c. 41. v. 43. ^b Ibid.

&c. ^c. The entertainment of the queens of Egypt must have been exceeding sumptuous, if we judge of it from what is said by Diodorus, that the whole revenue of the fishing of the lake Mœris was allotted for that purpose. This sum, great as it was, for it amounted to a talent a-day, was only designed to find these princesses in robes and perfumes ^d. Besides, it is not surprising to find so much magnificence among the Egyptians in such ancient times. This people being blessed by nature with industry and ingenuity, soon carried the greatest part of the arts to considerable degrees of perfection. These discoveries enabled them to gratify their inclination for elegance and magnificence. But enough of this at present. Let us now proceed to speak of the peculiar character and genius of the Egyptians.

Wives in Egypt had a mighty influence over the minds of their husbands. Either from custom or natural temper, they were absolute in their houses ^e. This ascendant of the women over the men, is, in general, the mark of a people of mild and gentle dispositions. This agrees perfectly well with the idea given us by history of the temper of the Egyptians. Besides, they used a great deal of politeness, respect, and good manners, in their intercourse with one another ^f. As they were enemies to all disputes and quarrels, and fondly addicted to the arts and sciences, the pacific virtues were the great objects of their love and admiration. They applied also to the study of politics, and the arts of government. Their laws have been much celebrated by the ancients. But all these good qualities were more than balanced by their greater defects and vices.

Singularity and superstition were the distinguishing characteristics of the Egyptians ^g. I said in the beginning of this article, that they seem to have affected whimsical and uncommon customs. We must have observed some of this kind a-

^c See *supra*, b. i. art. 4. p. 50.

^d L. i. p. 62. See also Athen. l. i. p. 33. F.

^e Diod. l. i. p. 31. ^f Herod. l. 2. n. 80.

^g See Herod. l. 2. n. 35. 36. & 65.; Diod. l. i. p. 93.

mong those we have just mentioned. This people had even customs which seem, in some sort, shocking to nature, and which I do not think proper to repeat. Such as desire to know them, may consult Herodotus ^h. This singular way of thinking and acting, not only alienated the Egyptians from other nations, but must have occasioned dissension among themselves, and averfions between the inhabitants of different provinces. One thing particularly which must have been the source of much dislike to one another, was the way of life which each family had embraced. In Egypt each of the professions which are necessary to a state, had a fixed and settled rank. The son was obliged to follow the profession of his father; none was permitted to raise himself from an inferior to a superior class ⁱ. At the same time, custom had annexed an idea of aversion and contempt to certain extensive and useful professions, which of themselves had no tendency to excite such sentiments. That of tending flocks, which was esteemed the most honourable of all professions ^k by the other nations of antiquity, was held in abhorrence by the Egyptians ^l. This way of thinking prevailed in Egypt in the days of Joseph; which obliged him to use several precautions, when he introduced his father and his brethren to Pharaoh ^m. Yet the Egyptians had a great many flocks ⁿ, and consequently there must have been a great many shepherds. Here then was a numerous and useful body of men rendered the object of public aversion, by capricious custom. I will not stay at present to display the pernicious consequences of such maxims. I shall have occasion to insist particularly on this, in the third part of this work ^o.

With regard to superstition, no nation in the world ever betrayed such ridiculous weakness, both as to the objects and the forms of their worship. What raileries have the Egyptians been exposed to, on account of their stupid veneration for some animals? What indeed can be said for the father of a fa-

^h L. 2. n. 35. 36. ⁱ See part 3. b. 1. c. 4. p. 25.

^k See *supra*, c. 1. p. 339.

^l Gen. c. 46. v. 34; Herod. l. 2. n. 47.

^m Gen. c. 46. v. 34.

ⁿ Ibid. c. 47. v. 6. 16. 17. ^o B. 1. c. 4. p. 22. & seq.

mily, who, when his house is on fire, takes more pains to save his cat than to extinguish the flames ^p? What can we think of a soldier, who, returning from making war in a foreign country, loads himself with cats and vultures, though he often wants necessary bread ^q? Once more, what name can we give that sottish adoration which a great part of Egypt paid the crocodile? The blindness of these infatuated wretches was so great, that they were transported with joy, when their children were devoured by that fierce creature. The mothers of these unhappy victims felt a singular satisfaction from these fatal accidents, glorying that they had produced an agreeable nourishment for the divinity they worshipped ^r. The Egyptians, when reduced to the last extremities of want and famine, would rather eat one another, than touch one of the sacred animals. It is even affirmed, that there have been examples of this ^r.

Diodorus confesses, that it was much easier to relate the horrid extravagancies of the Egyptians about their sacred animals, than to procure belief from such as had not seen them. They had always a certain number of them in inclosures, consecrated to that pious use. Great revenues were set apart for their maintenance ^r. They fed them only with the choicest meats prepared in the most delicate manner possible. They went a-hunting, on purpose to procure the carnivorous birds such food as was most agreeable to them. There were delicious baths prepared for all these various animals. They perfumed them, and burnt the sweetest odours before them. The places where they reposed, were spread with the richest carpets. They decked their bodies with jewels, and other costly ornaments. They were at prodigious pains to pair them according to their several kinds. For this purpose, they searched out the most beautiful females, fed and tended them with particular attention, and honoured them with the title of the concubines of the gods. In a word, they spared no pains, no expense to entertain the sacred animals in a magni-

^p Herod. l. 2. n. 66. ^q Diod. l. 1. p. 95. See Athen. l. 7. c. 13. p. 299. 300.

^r *Alian. de nat. animal.* l. 10. c. 21.

^r Diod. l. 1. p. 94.

^r *L. 1. p. 93.*; *Plut. t. 2. p. 359.*

ficent manner, and render their lives as agreeable as possible. Persons of the highest rank performed these important functions ^u.

What extravagant follies did the Egyptians commit when any of the sacred animals happened to die? They bewailed them more bitterly than they would have done their own children. The most zealous devotees sometimes ruined themselves by the expenses of their funerals ^x. In Egypt, it was not near so dangerous to murder a man, as to kill a cat, an ichneumon, an ibis, or a hawk. Whoever had occasioned the death of one of these animals, either by design or accident, if it came to be discovered, was seized upon by the people, and, after suffering all kinds of torments, was unavoidably torn in pieces ^y. One must have been constantly exposed to great dangers in this country, where involuntary accidents were punished in the same manner with premeditated crimes.

Besides, the objects of this senseless adoration were not the same over all Egypt. There was no uniformity in this respect. The inhabitants of Mendes, for example, worshipped goats, and eat sheep; while those of Thebes, on the other hand, worshipped sheep, and fed upon goats ^z. In the same city, and all about the Lake Mœris, the crocodiles were worshipped; while at Elephantine, and other places, they were killed without mercy ^a. These things must have been perpetual sources of hatred and dissension among the inhabitants of Egypt. They were divided into a great many societies, distinguished from, and prejudiced against one another by their different objects and rites of worship. What was adored in

^u Herod. l. 2. n. 65.; Diod. l. 1. p. 93. 94. 95.; Ælian. de nat. animal. l. 7. c. 9.

From the relics of this ancient superstition, the Bashaw of Cairo delivers every day two oxen for the maintenance of the Achbobbas, a kind of bird which the Mahometans esteem sacred. *Voyage de Schaw*, t. 2. p. 92.

^x Diod. l. 1. p. 95.; Herod. l. 2. n. 66. 67.

^y Herod. l. 2. n. 65. 66.; Diod. l. 1. p. 94.

^z Herod. l. 2. n. 42.; Strabo, l. 17. p. 1155.

^a Herod. l. 2. n. 69. 70.; Ælian. de nat. anim. l. 10. c. 21. & 24.; Strabo, l. 17. p. 1169.; Juvenal. satir. 15. v. 33. &c.

one place, was despised in another. The Egyptians looked upon each other reciprocally as atheists, and enemies to religion. This enmity was fiercest between those cities whose gods were naturally enemies ^b. The hatred between the cities of Arsinoe and Heracleopolis must have been very keen. The one worshipped the crocodile; and the other adored his mortal enemy the ichneumon ^c.

I might also speak of the worship which, according to some ancient writers, the Egyptians paid to vegetables of various kinds ^d. But this fact, I confess, does not appear to me well enough attested, to merit much attention. Herodotus, Plato, Aristotle, Diodorus, Strabo, in a word, all the most ancient writers, and the most worthy of credit in the affairs of Egypt, make no mention of this singular superstition, which was too extraordinary to have been passed over in silence. Juvenal, I think, was the first who upbraided the Egyptians with it, and his authority does not seem to me of sufficient weight to determine this point. The severe humour of this satirist made him, no doubt, draw the picture much more ridiculous and odious than the original ^e. Neither is much regard to be paid to what we find in Lucian on that subject. We see plainly, that, in the passage where he speaks of the Egyptians worshipping onions, his intention was to turn all religion into ridicule ^f. With this view, Lucian might take advantage of the known character of the Egyptians for superstition, to impute to them the most extravagant and ridiculous object of worship he could think of.

We cannot tell with precision, what ideas the Egyptians formed of the virtues and the vices. We know that they have been accused by the ancients of cunning and infidelity in their dealings. In general, their reputation for probity was

^b See Diod. l. i. p. 100.; Plut. t. 2. p. 380. A.

^c Herod. l. 2. n. 69.; Diod. l. i. p. 41. 42. 90. 98.; Ælian. de nat. animal. l. 10. c. 24.; Plut. t. 2. p. 380. B.; Juvenal. satir. 15. v. 32. &c.; Lucian. in Jove tragœd. n. 42. t. 2. p. 690.; Jos. advers. Appion. l. i. n. 71.

^d Juvenal. satir. 15. v. 9. 10.; Lucian. in Jove tragœd. n. 42. t. 2. p. 690.

^e *Porrum & cepe nefas violare, ac frangere morsu.*

O sanctas gentes, quibus hæc nascuntur in hortis

Numina! Juvenal. loco cit.

^f See the whole dialogue, intitled, *Jupiter Tragœdus*.

but very low ^f. With regard to decorum and modesty, if we may judge from certain facts, their principles were not over severe or strict. It was, no doubt, from the knowledge Abraham had of the character of that people, that made him pretend that Sarah was his sister ^g; and the manner in which she was taken from him, and carried to Pharaoh's palace, confirms this opinion ^h. This patriarch, according to the scripture-account, owed the good treatment he met with in Egypt, to the beauty of his wife ⁱ. We may add to this the adventure of Joseph and Potiphar's wife, and that of Pheron the successor of Sesostris, related by Herodotus ^k and Diodorus ^l. For though the circumstances of that story are greatly disguised by fables, yet still we may collect from it to what a height corruption of manners had arrived in Egypt.

Besides, if we may judge of the manners of a nation by their public ceremonies, which, being designed to please the whole people, must be a faithful representation of their dispositions, what an opinion must we entertain of the decency and modesty of the Egyptians? Let us only represent, in what manner they conducted themselves in going to the celebration of the festival of Diana, several times a-year. This great solemnity was held at Bubaste, and they crowded thither from all parts by water. Great numbers of men and women embarked in the same vessel. During the voyage, some of the women played upon a kind of castanets, and some of the men on flutes. The rest accompanied them with singing and clapping their hands. When the vessel passed near a city, it stopped. The women on board called to those in the city, assaulted them with the most approbrious, or rather obscene language, and were guilty of the greatest indecencies ^m. When they arrived at Bubaste, they celebrated the festival by drinking and gormandizing ⁿ. We are well assured, that all the festi-

^f Plato. de rep. l. 4. p. 642. A.

^g Jos. antiq. l. 1. c. 8.; Gen. c. 12. v. 11. &c.

^h Ibid. v. 15.

ⁱ Ibid. v. 16.

^k L. 2. n. 111.

^l L. 1. p. 69.

^m Herod. l. 2. n. 60.

It is very remarkable, that the custom of abusing one another on the water with ill language, has prevailed in all ages and in all countries.

ⁿ Id. loco cit.

vals of the Egyptians were kept in the same manner. In them they committed such shameful disorders, that profane historians have seldom ventured to describe them ^a.

Notwithstanding this, jealousy is said to have made a part of the character of this people. The Egyptians, as Plutarch relates, endeavoured to confine their wives to their houses as much as possible. To render them sedentary, they used means somewhat similar to those practised by the Chinese at present. The Chinese make their women wear such little shoes, that not being able to walk but with difficulty, they are obliged to remain in their apartments. The Egyptians allowed theirs no shoes at all, and thus prevented them from going much abroad ^b.

When we are speaking of jealousy, it affords us a fair occasion to consider the origin of eunuchs. We know not in what age or country this inhuman art was invented, of mutilating men in order to make them the guardians of womens chastity. I see no foundation for what is said by Ammianus Marcellinus, who attributes this invention to Semiramis ^c. I allow that this was probably thought of first in some warm country; but this barbarous expedient for securing the fidelity of women, must have sprung from jealousy. As this is the predominant passion of the people of the east, I doubt not but this practice prevailed among them early. But we cannot determine whether it was invented in Asia or in Egypt, or in what age. We see only that there were eunuchs in Egypt in very distant times. Moses forbids eunuchs to enter into the con-

^a See Herod. l. 2. n. 61. See also Diod. l. 1. p. 96.; Strabo, l. 17. p. 1153.

^b Plut. t. 2. p. 142. C.

This may at first appear contradictory to what is said in the 4th book, where, speaking of commerce, we said, after Herodotus, that it was carried on by the women. But it is easy to reconcile this apparent contradiction. Plutarch probably speaks only of women of distinction. It was probably in Egypt formerly, as it is in China at present, where the women of lower rank appear in the streets, but not women of quality. And even though the Egyptians obliged all their women to be bare-footed, this would not prevent them from attending their shops.

^c L. 14. c. 6. p. 26.

It will be said perhaps, that Semiramis, whose debaucheries, according to the account of all historians, were very great, invented this method to avoid the disagreeable effects of her incontinence.

gregation of the Lord^r. There must therefore have been eunuchs before his time. Manetho says, that the father of Sesostris was assassinated by his eunuchs^r. This was near two hundred years before Moses^r. We know also that the custom of gelding animals was very ancient in Egypt^u. The one of these probably suggested the other. Experience having shewn, that an animal might survive such an operation, jealousy laid hold of this expedient, to calm its suspicions and disquiets. I do not doubt, therefore, but they had eunuchs in Egypt in the ages we are now examining.

It remains only to say a few words of their public diversions and amusements. These consisted entirely in their religious festivals and solemnities, which were celebrated with singing, dancing, feasting, and pompous processions. Such were the public diversions of the Egyptians, and I meet with none among that people which had not some relation to religion^{*}. They knew nothing of games, theatrical representations, races, combats, nor, in a word, of any of those diversions which were, by ancient and modern nations, comprehended under the name of shews or spectacles. The Egyptians forbid wrestling, imagining that this exercise communicated to the body only a momentary and mischievous strength^z. They considered music, not only as a useless, but pernicious art, as it softened and enervated the mind^y.

With regard to the private amusements of the Egyptians, we know not whether they had any, or if they had, of what kind they were. It appears only that this people used to keep their birthdays with rejoicings. Pharaoh, on such an occasion, gave a great feast to all his officers^z.

Some other particulars in the customs and manners of the

^r Deut. c. 23. v. 1.

^r Apud Syncell. p. 59. D.

^u See part 2. b. 1. chap. 2.

^u *Supra*, p. 349.

^{*} See Plato de leg. l. 7. p. 886.

^{*} Diod. l. 1. p. 92.

^y Ibid.

What Diodorus says of music, must be understood with some restrictions. That art was certainly not so much neglected by the Egyptians as he would have us believe. See Herod. l. 2. n. 79.; Plat. de leg. l. 2. p. 789. 790.; Clem. Alex. Strom. l. 6. p. 757.; et Diod. himself, l. 1. p. 19. & 20.

^z Gen. c. 40. v. 20.

Egyptians might perhaps be mentioned; but I shall pass them over in silence, to avoid too great minuteness and prolixity.

C H A P. III.

Of the people of Europe.

I shall say nothing at present of the people of Europe. Properly speaking, there were as yet no manners in this part of the world. Its inhabitants were for many ages plunged into the most deplorable ignorance and barbarity. They had for a long time no fixed or formed societies. We may recollect what I have said of their primitive way of life in the preceding books*. Besides, we know very little of the customs and behaviour of the first inhabitants of Europe, and want that particular information which is necessary to enable us to form any judgment of a people's manners.

C H A P. IV.

Critical reflections upon the ages which make the subject of this first part.

THE ages which we have been examining, have been long considered as the best and happiest period of the world. Many writers of distinguished merit have laboured to give us this idea of them. How often are we told, that, in the patriarchal ages, the world enjoyed a happy simplicity! that pride, ambition, luxury, and all tumultuous passions, were then unknown to the inhabitants of this earth? Nay, they go so far, as to represent them free from those infirmities which

* B. 1. chap. 1. art. 5. p. 64. b. 2. chap. 1. p. 105. &c.

are inseparable from human nature. The elogium, in a word, is perfect; since whatever the poets have sung of the golden age, is applied to these happy times. But is this application just? does it accord with the facts? This is what we are going to examine.

When we would form a just estimate of any age, we must not be directed by vain declamations, and pompous panegyrics, dictated for the most part by a wild unbridled imagination. History is the only guide which we ought to consult and follow. If we peruse, then, the annals of ancient nations, and collect the facts recorded in the history of these first ages, they will give us the most frightful and shocking ideas of them. A short recapitulation will convince us of this.

They would persuade us, that avarice and ambition were unknown to the first generations of men *. But if we cast our eyes on history, we shall soon perceive the futility of this pretension. In the remotest ages, we meet with conquerors famous for their exploits and devastations, destroyers of mankind, whose ferocity was not restrained by any principles of humanity b. If the list of these scourges of the world is not long, this is because the history of these first violences and usurpations is but imperfectly known to us, from the great distance of time, and want of ancient monuments. Possibly, too, there might be nothing very interesting to posterity in these events, and therefore no care was taken to preserve their memory c. But from the few facts which have been transmitted to us, we see clearly with what excessive cruelty

* As we are speaking of the ages after the deluge, this expression, *first men*, which I use pretty frequently in this chapter, may appear improper. But to avoid prolixity, I hope I may be allowed to use this expression of those who lived in the first ages after the flood. May not that great event be considered as the beginning of a new world?

b See *supra*, b. 5 p. 322. &c.

c *Nam fuit ante Helenam :* _____

_____ *sed ignotis perierunt mortibus illi,
Quos, Venerem incertam rapientes, more ferarum,
Viribus edipior cædebat, ut in grege taurus.*

Horat. *serm.* 1. 1. *sat.* 3. v. 107. &c.

wars were carried on in these first ages, The law of nations was then absolutely unknown. Conquerors listened only to the dictates of their own brutality and rage ^d.

They would also have us to believe, that pomp and luxury were unknown to the people of these times. I have already, if I am not mistaken, sufficiently refuted this pretence ^e. I shall add, that we ought to judge of manners only by comparison. There was not, it is true, the same magnificence in the first ages as in later times. Those elegant pleasures which are the effects of industry, and the perfection of the arts, those refinements, if we may so speak, in voluptuousness, it is certain had no existence in the ages we are now contemplating. I am far from reproaching these first men for their ignorance, but neither would I have it to be reckoned honourable or meritorious ^f. They had a kind of luxury proportioned to the extent of their knowledge. We have seen several proofs of this in the chapter on manners and customs. All depends, as I said above, on the comparison of times and places. At present we would hardly take the least notice of things which were reckoned the highest magnificence but two hundred years ago ^g. We find a taste for dress and luxury in the rudest ages, and among the most savage nations.

Let us no longer then ascribe chimerical virtues to the first ages. If plainness and simplicity appear to be their distinguishing characteristic, we must ascribe this to their not knowing how to procure better accommodations, and not to their principles of virtue and moderation. The truth is, they were not essentially better men, they had neither more virtuous sentiments nor greater probity on account of this simplicity. On the contrary, we see the same vices reigning then, which are in all ages the disgrace of human nature; the same infidelity, malice, envy, murder, violence, and debauchery, which prevail in other times.

^d See *supra*, b. 5. p. 322. &c.

^e *Supra*, b. 6. p. 335.

^f *Ibid.* p. 335.

^g We do not take the least notice, at present, of a person for wearing silk stockings. But a pair of these stockings which Henry II. of France had on at his sister's wedding, were admired as a piece of extraordinary magnificence.

I shall not bring those abandoned cities which were consumed by fire from heaven, as examples of that corruption of manners which reigned in ancient times. It is proper to draw a veil over such abominations. But we may recollect what was said in the article of manners, on the adventure of Tamar and Judah ^a. It appears in general, that the people who lived in those times, had no very high opinion of the virtue of their contemporaries. Abraham apprehended that they would slay him for his wife's sake. In fact, she was twice taken from him, and that patriarch probably owed the preservation of his life to the peculiar care of heaven. Isaac had the same fears on account of Rebecca ^b.

The story of Dinah is sufficient to show what excesses men were capable of committing in these times. The son of a sovereign carries off a young lady from her family, and proceeds to violence to gratify his passion. The sons of Jacob, to satisfy their vengeance, are guilty of the vilest perfidy, and prostitute the most sacred ceremony of their religion, to accomplish their bloody purposes. The too credulous Sechemites, who had no concern in the crime committed by their prince, were massacred at a time when they thought themselves secure under the sanction of a treaty solemnly sworn ^c. Could the most profligate ages be guilty of blacker and more atrocious crimes than these?

Good faith was not more respected in the affairs of private persons, and even of near relations. Jacob agrees with his uncle Laban to serve him seven years, upon condition that he should give him his daughter Rachel in marriage. When this term was accomplished, what a shameful imposition was Laban guilty of to obtain other seven years service from his nephew? In the night of the marriage, he substituted Leah in the place of Rachel; and Jacob was obliged to recommence his labours and services to obtain his beloved mistress. Could there be a more shocking breach of faith than this? What base treatment from an uncle to a nephew, who was also his son-in-law?

^a *Supra*, b. 6. chap. 1. p. 347.

^b *Ibid.* chap. 34.

^c Gen. c. 26. v. 7.

It was not private persons only who were then guilty of such violations of the most solemn conventions; whole nations were liable to the same reproaches. Abraham, in virtue of treaties and alliances which he had made with the people of Palestine, digged wells in different places ^k. I have shewn elsewhere the importance of such concessions ^l. As soon as Abraham died, the people of the country stirred up quarrel after quarrel against Isaac. They filled up the wells which his father had left him ^m. He was obliged to dig new ones; and it even cost him no little trouble to keep possession of these.

There was, we find, but little union and concord between persons of the same family. Esau and Jacob never lived on good terms. Joseph's brethren carried their enmity against him to the greatest extremity. Almost all Jacob's children gave him, at one time or other, the greatest grief and provocation. To say all in one word, Reuben his eldest son dared to defile his father's bed ⁿ. Let us add, that the Lord slew one of the sons of Judah, for an abominable crime he was guilty of, with a view, says the scripture, to extinguish his brother's race ^o.

If from these certain and well-attested facts, we proceed to consider the traditions which have been preserved by several ancient nations, they will not give us a more favourable opinion of these primitive times. From these we learn, that originally men lived without laws, without government, without arts, listening to nothing but their brutal appetites. Inflamed with mutual rage, they endeavoured to destroy, and even devour one another ^p.

Let us next cast our eyes on those events which happened in the first empires. We see, in history, Osiris fall by a conspiracy formed against him by his own brother Typhon; and such conspiracies have often destroyed the most excellent princes. The annals of all nations furnish us with examples of

^k Gen. c. 21. v. 30.

^m Gen. c. 26. v. 14. 15.

ⁿ Ibid. c. 38. v. 9. 10.

^o See *supra*, b. 1. p. 3. b. 2. p. 79.

^l *Supra*, b. 5. p. 324.

^p Ibid. c. 33 v. 22. c. 49. v. 3. 4.

them.

them. Saturn usurped the throne from his father, and was in his turn supplanted by his son Jupiter. The first heroes, who were afterwards worshipped, are chiefly distinguished by their usurpations, cruelties, and shameful excesses of all kinds⁹. What a character have the ancients left us of Ninus and Semiramis^r?

From these facts, therefore, let us draw this conclusion, that men have been essentially the same in all ages. From their birth subjected to the evil tendencies of a corrupted nature, they have laboured at all times to gratify their passions, sometimes with lesser, and sometimes with greater degrees of delicacy, according to the taste and knowledge of the age in which they lived. Mens ways of thinking and acting have always bore a relation to their circumstances. The apparent simplicity of the first ages, so much celebrated by many authors, was owing to their ignorance and rudeness. These times would be more truly characterized, by saying that vice then appeared in all its ugliness and deformity.

I have forgot to speak of hospitality. It is for this virtue the primitive times are chiefly famed. But, in my opinion, hospitality was then exercised, not so much from generosity, and greatness of soul, as from necessity. Common interest probably gave rise to that custom. In remote antiquity, there were few or no public inns. They shewed hospitality therefore from self-love. They entertained strangers, in hopes that they might render them the same service, if they happened to travel into their country. Hospitality was reciprocal. When they received strangers into their houses, they acquired a right of being received into theirs again. This right was regarded by the ancients as sacred and inviolable, and extended not only to those who had acquired it, but to their children and posterity.

Besides, hospitality in these times could not be attended with

⁹ See Sanchoniat. apud Euseb. præparat. evang. l. i. c. 10. p. 34. 35. &c.

^r See Conon, apud Phot. narrat. 9. p. 428. 429.; Diod. l. 2. p. 114. 119. 127.; Justin. l. i. c. 2.; Plin. l. 8. sect. 61. p. 466.; Plut. t. 2. p. 753. D.; Syncell. p. 64.

much expense. Men travelled but little, and without much retinue. In a word, the modern Arabians prove very clearly, that hospitality may consist with the greatest vices, and that this species of generosity is no decisive evidence of goodness of heart, or rectitude of manners. The general character of the Arabians is well known, and yet there is not a more hospitable people.

I am far from denying that there were some virtuous persons in the first ages. The holy scriptures prove there were. But they prove at the same time, that the number of these truly virtuous persons was but small; and every thing else shews, that the rest of mankind were wicked, unjust, cruel, and debauched, living, in a word, without shame or modesty, without any principles or rules of moral conduct. It is to nothing then but that ancient humour of decrying our cotemporaries, that the primitive ages owe the virtues which have been lent them, and the praises which have been so lavishly bestowed upon them. But these pompous declamations vanish and disappear before the torch of truth.

It is of importance to take notice, that these reflections do not in any manner contradict that tradition which universally prevailed in all ancient nations, concerning that state of innocence and felicity which man enjoyed in the first age of the world. This truth is too generally and uniformly attested to admit a doubt. The Babylonians, Egyptians, Chinese, Greeks, Latins, all those nations, in a word, whose traditions concerning the primitive state of man we know any thing of, declare with one voice, that man originally enjoyed a state of innocence and felicity, which he has never again recovered. This concurring testimony of all nations, to the Mosaic history of the first man, is sufficient to demonstrate its truth, if we were even to consider this legislator of the people of God as a common historian. The case, as to a matter of fact, is very different from that of a principle in morality, or a discovery in the arts or sciences. Men in different ages and countries may entertain the same sentiments in morals, or hit upon the same discoveries

discoveries in arts and sciences, without having communicated their thoughts to each other. But this cannot happen as to a matter of fact or point of history. When that is known, and admitted by all nations, it must not only be authentic, but it must have flowed from one common source. The tradition therefore concerning the state of innocence in the first age of the world, is undisputable. But it would be wrong to apply this tradition to the ages we have been examining. The contrary is sufficiently demonstrated by all the remaining monuments of antiquity.

DISSERTATIONS.

DISSERTATION I.

On Sanchoniatho.

Eusebius has inserted, in his Evangelical Preparation, a long extract from an ancient Phœnician historian, named *Sanchoniatho* ^a. This author, he says, wrote before the Trojan war, and, it was believed, had been very critical in his inquiries ^b. Sanchoniatho had wrote in his native language, the Phœnician; but his work had been translated into Greek by Philo of Byblos, who must not be confounded with Philo the Jew, whose writings are still extant ^c. Philo had divided his translation of Sanchoniatho into nine books. To these he had added some prefaces, of which Eusebius has also given us a few extracts ^d. Philo, among other things there, said, “ That Sanchoniatho, a man of great learning
 “ and experience, being extremely desirous to know the hi-
 “ stories of all nations, had sought out and examined the
 “ writings of Thoth, with the greatest care, imagining
 “ that as Thoth had been the inventor of letters and wri-
 “ ting, he was also the first of historians ^e.”

Sanchoniatho then, according to the testimony of his translator, had built his history on the writings of that venerable sage, called by the Egyptians *Thoth*, by the Greeks *Hermes*, by the Latins *Mercury* ^f.

Philo, as Eusebius further informs us, did not content him-

^a L. i. c. 9. p. 30. D.

^b Ibid.

^c Ibid.

^d Ibid. p. 31. D.

^e Euseb. l. i. c. 9. p. 31. D.

^f Ibid. p. 31. 32.

self with only commending Sanchoniatho. He made use of the facts recorded by that author, as authorities, to convince the Greeks of ignorance, on one of the most important and interesting subjects. He accused them of turning the history of the ancient divinities, which were worshipped in their country, into insipid allegories; and blamed them for endeavouring to explain away true facts and real events, into the phænomena of nature *.

The author which Philo had translated, had proceeded in a different manner. After diligent inquiries and long study, he had composed a history, in which it appeared, that these ancient divinities had been originally famous men, afterwards deified by superstition. What he related of their actions, and the principal events of their lives, he had collected partly from monuments existing in several cities, and partly from memoirs deposited and preserved with care in the most ancient temples †.

The common prejudices of translators are well known. These encomiums, therefore, of Philo, might have appeared suspicious, if they had not been confirmed by the testimony of some impartial and disinterested author. It is probably for this reason, that Eusebius has taken care to acquaint us, that the sentiments of Porphyry concerning Sanchoniatho's history were not less favourable than those of Philo ‡. This is sufficient to intitle this monument of antiquity to particular regard.

There is hardly any thing in all antiquity has so much exercised the critics. The importance of the matter has, no doubt, been the cause of this. If the authenticity of Sanchoniatho is established, and if it is not a piece fabricated in after times, we have in it the most ancient history of mankind that we know, next to that of Moses. Our business, therefore, is to examine the authenticity of this fragment, to inquire if it ought to possess the first place among all the monuments of profane antiquity, which have escaped the injuries of time. For it is universally known, that the fragments

* Euseb. p. 32.

† Ibid.

‡ Ibid. l. i. c. 9. p. 31. & 42.

which we now have under the names of Hermes, Zoroaster, Thoth, and Orpheus, are the forgeries of authors very modern, in comparison of those whose names they bear.

The labours of the learned on the writings of Sanchoniatho, had no other object but to illustrate and explain them, till towards the conclusion of the last century. No body, that I know, so much as suspected them to be forgeries. J. H. Urfinus^{*} was, I believe, the first who raised doubts about the authenticity of Sanchoniatho. This opinion has been adopted by several writers, and among others by R. Simon. But the manner in which he expresses himself, plainly enough shews that the attacks made upon the authenticity of this fragment had been attended with little success^{*}. Accordingly we see that many of the most learned critics have given a different judgment, and regarded this extract of Eusebius, as a precious relic of the ancient traditions of the east[†]. I do not design

^{*} J. H. Urfini, de Zoroastre, Hermete, Sanchoniathone, Exercit. fam. Norimberg, in 12^o 1661.

^{*} These are his words. "It would seem," says he, "that we cannot, without a kind of temerity, suspect the famous work of Sanchoniatho, which contains the ancient theology of the Phœnicians. All our best critics have quoted it with encomiums after Eusebius." *Biblioth. critiq. or Recueil de diverses pieces critiques publiées par M. de Saint-Jorre, à Balle, 1709, t. 1. c. 10. p. 131.*

Let us make two very short reflections on these words of M. Simon. 1. He confesses that very able critics have acknowledged the authenticity of Sanchoniatho. 2. He seems to suppose, that Eusebius is the only author of antiquity, who gives his testimony in favour of this ancient writer. M. Simon does more; for he adds, that Eusebius spoke of Sanchoniatho only from Porphyry. Yet we see, that Theodoret made use of the writings of Sanchoniatho, to prove that the gods adored by the Pagans, had been originally men. Eusebius, therefore, is not the only one among the ancients who has quoted Sanchoniatho. The contrary shall be proved by and by. Neither is it true, that Eusebius speaks of Sanchoniatho only from Porphyry. This, as we shall see presently, is another gross mistake of M. Simon.

[†] Bochart, Vossius, Marham, Huet, Cumberland, la Croze, and in the last place, M. Fourmont in his critical reflections on the history of ancient nations.

Father Kircher affirms, that there were some fragments of Sanchoniatho in the Great Duke's library. He adds, that he himself, at the time of his writing, had in his hands another fragment of Sanchoniatho, consisting of several sheets, written in the Aramean, that is to say, Phœnician language, which is much the same with the Chaldee and Syriac. Father Kircher thinks, that this

design to enter into all the details which the discussion of these two opinions might require. Yet as I have made so much use of this fragment we are treating of, I think I cannot dispense with myself from representing in a few words, the reasons which have determined me to regard it as an authentic monument, happily escaped from the injuries of time.

The opinion of those who look upon Sanchoniatho as a forged piece, cannot be supported without ascribing some views, some motives to the author of such a forgery. We must examine, therefore, what these views could be. But it is necessary to inquire, first, on whom the suspicion of this pretended forgery must fall. We shall discuss these two points in as summary a manner as possible; and this discussion, I am persuaded, will clearly shew how little solidity there is in those arguments which have been alledged to call the authenticity of this fragment in question.

Philo, of Byblos is indisputably the only person on whom the suspicion can fall, of having forged Sanchoniatho. It is a gross mistake, to ascribe this work to Propyry. Athenæus, more than forty years before Propyry, quoted Sanchoniatho¹; and he is not the only author anterior to Propyry who has mentioned it. Clemens of Alexandria, as St Cyril reports, spoke of Sanchoniatho as a Phœnician historian, who had wrote in his own native language, and whose work had been translated into Greek^m. It is true, we do not find at present

this fragment had been translated into the Aramean language, from the original of Philo. This MS. treats, as he says, of the manners and customs of the Egyptians, and principally of the mysteries of Mercury, not containing, however, any thing which is not to be found in other authors.

M. de Peiresc had received this fragment from the east. It had been taken out of the library of Damas. M. de Peiresc had sent a copy of it to Rome to Father Kircher in 1637, for him to explain it. It was, as we see, but a slender discovery.

Father Kircher adds from Leo Allatius, that Philo's translation of Sanchoniatho had been found a little before in the library of a monastery near Rome; but that this MS. being esteemed rare and valuable, had been stolen soon after, and never could be recovered. Obelisc. Pamphil. p. 110. *Sit penes auctorem fides.*

¹ L. 3. p. 126. A.

^m Advers. Julian. l. 6. p. 205.

It is through inadvertency that St Cyril in this passage names Josephus, instead of Philo, as the translator of Sanchoniatho.

in

in the writings of this father, the passage which St Cyril had in his eye, when he wrote what I have repeated; but we need not be surprised at this. We have not all the writings of Clemens of Alexandria: the beginning of the first book of his *Stromata* is entirely wanting, and there are several breaches in the other books. Sanchoniatho, then, has been quoted as an author of antiquity by Athenæus, Clemens of Alexandria, Porphyry ^a, and St Cyril, not to mention Eusebius, Theodoret ^b, and Suidas. We may even observe, with respect to this last writer, that he speaks of Sanchoniatho in such a manner, as to give us to understand, that he did not refer to the testimony of Eusebius ^c.

Lastly, Eusebius did not quote Sanchoniatho, as an extract taken from Porphyry; it was from the translation of Philo itself, that he had copied the fragment which he has inserted in his *Evangelical Preparation*. On the supposition, therefore, that Sanchoniatho was a forged history, it could be done by no body but Philo.

But, as we said a little above, in order to determine an author to forge such a work as that of Sanchoniatho, he must have had some views, some motives to engage him to commit such an act of infidelity. But what views, what motives can be ascribed to the pretended forger of Sanchoniatho? To this day, they have been able to invent only two; the one to oppose this work to the writings of Moses; the other to prevent the progress of Christianity, and restore the ancient religion, by purging it of the superstitions which defaced it ^d. These two motives are equally imaginary and chimerical. Philo wrote under Adrian ^e, about the year 125 of the Christian æra. A single glance of the eye, on the state of Jews and Christians in these ages, is sufficient to shew how little strength there is in all the reasonings just now mentioned.

The Jews did not endeavour to propagate their religion;

^a De abstinent. l. 2. p. 224. ^b De curand. Græc. affect. lib. 3. p. 34.

^c Voce Σαγχωνιαθων, t. 3. p. 274.

^d See L'hist. crit. de la republiq. des lettres, t. 6. p. 57. et 58.

^e Suidas, voce Φίλων Βιβλίου, t. 3. p. 613.

and we do not find, that the infidel nations which surrounded them, carried on any religious controversy with them. It does not even appear, that in any age their religion attracted much of the attention of other nations. Besides, the Jews never made any great figure in the world of letters: after the destruction of Jerusalem particularly, we may affirm, that they were of little or no consideration. History represents them as conquered by the Romans, driven from the sight of their depopulated country, struck by the divine malediction, wandering from place to place, proscribed over the whole world, abhorred by all nations; quite ingrossed by their calamities, and a chimerical expectation, they were never named but to be ridiculed. Adrian, under whom Philo of Byblos wrote, finished, if we may so speak, the annihilation of the Jews, when he built *Ælia* on the ruins of Jerusalem.

With respect to Christians, I acknowledge, that, in Philo's time, the gospel had already made considerable progress; yet I do not imagine, that the disciples of Jesus Christ, and the excellence of their religion, were then sufficiently known, to give great alarms to the patrons of Paganism. At that time they almost always confounded the Christians with the Jews. Besides, I do not think, that, under Adrian, very many persons of distinction, either for their philosophy and learning, or their birth and dignities, had as yet embraced the gospel. Thus, the little progress Christianity had made in the great world, could not have excited such a degree of jealousy, as to oblige Philo to undertake so great a work as that of *Sanchoniatho*; a work which must have cost him infinite labours and researches. For what prodigious pains must a writer be obliged to take, who would forge a history in the name of an author of antiquity *?

* Some critics have been pleased to say, that Philo had done nothing but appropriate to himself the books of Moses, by adapting them to his own particular views. In truth, a man must be strangely biased, not to perceive the prodigious difference there is between the books of Moses and the fragment of *Sanchoniatho*. I shall speak of this by and by at more length. In the mean time, we shall affirm that it is impossible to prove the least resemblance between the history of Moses and that of *Sanchoniatho*, on some of the most interesting subjects, as the fall of man, the worship of one God only, and condemnation of idolatry, &c.

Besides,

Besides, if Philo composed his Sanchoniatho, as it is said, with a design to prevent the progress of Christianity, by setting up against it the ancient religion purged from the absurdities which betrayed its weakness; it must be confessed, that he has taken the worst way in the world to accomplish this design. Philo says, it is true, that the history of Sanchoniatho is purged of the ridiculous fables with which the works of the Greeks are stuffed. But the fables which we find in it, though of a different kind, are at least as bad as those of Homer and Hesiod. Such are his animated stones, the star found by Astarte, and consecrated in the city of Tyre; the castration of Coelus by Saturn, and that of Saturn by himself, an example which he obliged all his companions to follow: not to speak of the thunder which gives motion to animals already created by the superior Spirit, as if awakened out of a profound sleep, &c. Behold some oriental fables, at least, as absurd as those of the Greeks. Let us no longer, therefore, ascribe to Philo a design, which the reading of Sanchoniatho alone, is sufficient to convince us he could not entertain.

It is much more natural to think, that Philo had a mind to mortify the vanity of the Greeks, by shewing, that his native country had produced writers of merit long before Greece. With this view he might endeavour to revive the history of Sanchoniatho. This preference inclines me to think, that Sanchoniatho was the most ancient and most admired of the Phœnician authors; for Philo could have translated others. The east had produced fruit, at a time when the first seeds of science had scarcely begun to shoot up in the west. Phœnicia, in particular, had been the nursery of several learned men in the remotest ages. Strabo speaks of a writer of that nation, named Moschus, who flourished before the Trojan war[†]. This Moschus had wrote on different parts of philosophy, on atoms, on the formation of the world[†], &c. Philo must then have chosen Sanchoniatho as an author capable of shewing, that Phœnicia had produced celebrated writers, at a time when the Greeks did not so much as know the art of writing.

[†] L. 16. p. 1098.

[†] Strabo, *loco cit.*

I suspect further, that Philo might have another motive for translating Sanchoniatho. When the philosophers had convinced the Greeks of the absurdity of the traditions which prevailed concerning their gods, two sects sprung up. The one allegorized all these pretended divinities, and said that mythology was nothing else but a kind of enigmatical physics, in which the different operations of nature were couched under the emblem of the different deities which were the object of religious worship. The Stoics very successfully propagated this opinion. The other sect, more sensible, confessed honestly, that the gods whom they adored, had been originally men; but they pretended that these men had justly merited their apotheosis by the sublime discoveries which they had communicated to mankind. Evhemerus the Messenian was the greatest promotor of this system. He composed a history of the gods *, which he pretended to have collected in the course of his travels, and extracted from the most ancient monuments which still existed in the temples which he had visited †. Whatever might be the intention of Evhemerus, he was treated as an Atheist by the greatest number, and his memory remains loaded with this reproach. But he had followers who maintained his opinions and explanations. They reduced into history every thing they found in fable, which had the least affinity to events which had happened in ancient times.

Thus two sects were formed in the bosom of Paganism, the Allegorists and Evhemerists. We cannot but discern in Philo of Byblos, the translator, or rather paraphrast of Sanchoniatho, one of the most warm and zealous partisans of Evhemerus. He found in Sanchoniatho, a writer who in many respects favoured the sect which he had embraced. He therefore translated this ancient historian. But he did not content himself with a plain literal translation. We see that he inserted without reserve into the text of his author, whatever additions and explanations he thought were proper to favour his own peculiar

* It was intitled *Ἱστορία Ἀναρχαίων*.

† See the dissertation of M. Fourmont in the mem. de l'acad. des inscript. t. 15. p. 265.

sentiments, and to make men find in the Phœnician traditions, the principles of the Evhemerian theology. Hence that mixture of Greek and Phœnician opinions, which has raised prejudices in so many learned men.

In reality, I am inclined to think, that it is this mixture of facts and opinions, in appearance contradictory, the want of uniformity in the style, and continuity in the narration, which have most contributed to make this fragment of Sanchoniatho be regarded as a forgery. But the causes of these singularities are not difficult to discover, if we will inquire into them. We easily perceive, at a second, or at most at a third reading, that Eusebius does not transcribe the text of Sanchoniatho, or, to speak more properly, of his translator, in a connected series, and as it lay in the copies of that author. We see plainly, that he pretty often interjects his own reflections; we perceive likewise, that he has frequently broke off the narration, and brought together facts which certainly did not follow each other in the Phœnician historian. There are also several places where a discerning critic will discover certain illustrations taken from those sort of prefaces, which, as we said at the beginning of this dissertation, Philo had added to his translation. Eusebius has inserted fragments of these where-ever he thought they would throw any light upon the subject. These interpolations, which are very easily distinguished, made us say, that, in all appearance, the Greek Sanchoniatho, is rather a paraphrase than a faithful version of the Phœnician. Therefore we must not think that the extract of Eusebius represents exactly the text of Sanchoniatho. On the contrary, it is evident, that this fragment, as we have it at present, is what we call interpolated; that is to say, that Eusebius sometimes transcribes the words of Sanchoniatho, or, to speak more exactly, of the translation of Philo of Byblos; it is sometimes the commentaries and additions of the translator; and pretty often he adds and inserts his own reflections.

But when by a serious study, and an exact analysis of the several parts of this fragment, we have separated these foreign interpolations from the genuine text of the author, one must be in some sort blind, not to perceive, in what remains, all the
marks

marks which characterise an original author, and point out the age and country of Sanchoniatho. Such are the ancient names of the Grecian deities, names purely oriental: the cosmogony of the Phœnicians very different from that of the Greeks: several facts which have an evident and direct reference to the ancient religion of Phœnicia, one of the principal articles of which was, the obligation of sacrificing their children in a time of calamity: not to speak of several other marks equally characteristic which we meet with in this fragment. If we will take into consideration, therefore, all that I have now said, viz. the paraphrase which Philo has made of the original, the additions he has inserted with particular views of his own, and the illustrations which Eusebius also has added from time to time; it will not be difficult, I imagine, to answer all the criticisms which have been made on the fragment in question. It is not a forged piece; it is a part of the translation which Philo had made of the whole work of Sanchoniatho.

The suffrage of Eusebius, independent of all that we have now said, is sufficient to defend it against all the objections which can be formed. If Sanchoniatho had been, in fact, nothing but a bad imitation of the sacred books; a work forged in later times, and falsely ascribed to a writer of the most remote antiquity by Philo and Porphyry; is it to be imagined, that such a writer as Eusebius would have suffered himself to be deceived by such a gross imposture? Would he have given us a work of so modern a date, for a monument of the remotest ages? It is sufficient to compare dates: Philo of Byblos wrote under Adrian: Eusebius was not ignorant of this. The translation of Philo might then appear about the year 125 of the Christian æra. Eusebius flourished, and was in his prime, at the council of Nice, in 325. Was an interval of two centuries sufficient to bring this forgery of Philo into such credit, as to impose upon Eusebius? With respect to Porphyry, the thing is still more incredible. We know that Porphyry was almost cotemporary with Eusebius.

In a word, the silence of the Emperor Julian, who was but thirty years posterior to Eusebius, seems to me decisive in

favour of Sanchoniatho. If that book had been a forgery, and if Eusebius had quoted a false and fabricated piece but a little before his time, would Julian have neglected to expose such a blunder?

But, it will be said, does not the real work of Sanchoniatho, independent of the additions of Philo, contain a great many absurd fables? Of what use therefore can this fragment be, and what authority can it have? I answer, that, in reality, we meet with several absurd and incredible things in the abstract of Eusebius. But it is one thing to say, that the name and works of Sanchoniatho are mere forgeries and chimeras (much as a learned man well known, advanced, that all the Greek and Roman antiquities had been fabricated by the Benedictines and Dominicans of the 13th century), another thing to say only, that Sanchoniatho had mixed a good many fables and absurd traditions in his writings, in which he had really preserved the opinions of his country, the manners and religion of his nation, &c. These two propositions are very different. These are, in a few words, my sentiments of Sanchoniatho.

It is certain, we meet with a good many fabulous traditions in this historian. In this respect, he found himself in the same condition, with all the authors of Paganism, who had a mind to write concerning the origin of the world, and the primitive history of mankind. Their writings must necessarily be mixed with many fables, partly from that obscurity which always accompanies remote events, and partly from the false marvellous of popular traditions, whose property it is to adulterate facts, and annex extraordinary circumstances to them. Criticism must separate what is false from what may be true. In this fragment of Sanchoniatho, his history of the creation is nothing else but the primitive tradition of mankind, but changed and disfigured by a writer who did not himself understand it, and who, besides, affected to speak enigmatically, according to the custom of all the sages of antiquity.

As to what Sanchoniatho says of the original state of men, and the actions of those whom he considers as the first parents of mankind, criticism places in the class of fables, every thing which

it finds in this writer contrary to the sacred history, and the light of reason. But what he says of the origin of arts, what he relates of the actions of Acmon, Uranus, Saturn, and Jupiter, being agreeable enough to all we know of the state of mankind in the first ages after the flood, may, and ought to be regarded as true, after divesting his narration of the marvellous which accompanies all the events of very remote antiquity.

Before I conclude, I think I ought to speak my sentiments of a system, which has been but too generally adopted by those learned men who have regarded the fragment of Sanchoniatho as an original and authentic piece. There is not one of them who has not alledged, that this author had some knowledge of the sacred books. They fancy they perceive some conformity between Moses and Sanchoniatho in the creation, in the first events which happened in the world, and chiefly in the number of generations reckoned up in the writings of both these historians. On this foundation they have made great efforts to discover the names and actions of the ancient patriarchs, in the personages of Sanchoniatho. But this system is liable to difficulties, which, I imagine, will always be difficult to overcome.

Although we should suppose, what I by no means admit, that there is some kind of conformity between Moses and Sanchoniatho, concerning the creation of the world, this would not prove that the Phœnician historian was acquainted with the sacred books. A tradition concerning the creation of the world, has prevailed in the most ancient times*. It is not necessary to believe, that the knowledge of this great work could be acquired only from the books of Moses; the histories of all nations lead us up to a beginning: this is a truth attested by the writers of all countries, whose authority has always very much embarrassed those ancient philosophers who endeavoured to call this truth in question. It was from this source, therefore, that is to say, from the general tradition concerning

* See Bannier, *explicat. des fables*, t. I. p. 140. 141. 174. 178. 192. 193. 207. 218. 240.

the history of the world, that ancient authors derived their idea of an almighty being, who had created and arranged the universe; with this difference, that they have adulterated, disfigured, and darkened this precious truth, and that Moses has preserved it pure, and as it proceeded from the patriarchs¹.

Independent of this reflection, every thing proves, that Sanchoniatho could borrow nothing from the sacred books, if we consider the age in which he lived, *viz.* in the time of the judges. The Jews were then under the dominion of their neighbours; they were, in these times, both more ignorant and more despicable than they were afterwards. It was precisely in this interval that they suffered several captivities: the Jews then, for the most part, neglected to read their own books, and scarce adhered to their own religion. Besides, this nation has always been much despised, and even but little known by other nations.

To this reason, founded on the state and condition of the Jews in Sanchoniatho's time, let us add, that they always kept their books and their mysteries a profound secret; to which we may join the little communication they had with strangers, from their contempt of them, and their fear of being polluted by them². These considerations are sufficient to shew, that profane authors could not borrow any thing from the sacred books.

It has been imagined, notwithstanding, that Sanchoniatho must have had some communication with the Jews. Porphyry says, that this historian had learned several particulars of which he speaks from Jerombaal, the priest of the god Jevo³. On this, Bochart maintains, that Gideon is the Jerombaal designed by Porphyry. But first, Philo, who was better acquainted with the writings of Sanchoniatho than Porphyry, does not say one word of this Jerombaal. On the contrary, he affirms, that it was from the writings of Thoth, that the Phœnician historian had taken the substance of his history.

¹ Bannier, *loco cit.* p. 209.

² See le Clerc, *bibl. anc. & mod.* t. 25. p. 335. 336.

³ *Apud* Euseb. *præp. evang.* l. 1. cap. 9. p. 31. & 32.

Besides, the title of *priest*, given by Porphyry to Jerombaâl, cannot agree to Gideon, who was neither of the tribe of Levi, nor of the family of Aaron. Last of all, it appears that Gideon himself was an idolater some part of his life ^b.

I do not pretend to draw an argument in favour of the opinion I am now maintaining from Sanchoniatho's silence about the deluge, the greatest and most memorable event that ever happened, an event of which almost all other historians have spoken, the tradition of which has been preserved by all nations, and which Moses has related with such wonderful veracity and exactness. It is nevertheless certain, that Sanchoniatho does not say one word about it. I shall not, however, take any advantage of his silence. For we must observe, that the original of Sanchoniatho has been lost a long time ago; we have nothing but a very imperfect extract from it, and that taken from a very unfaithful translation ^c. Besides, several critics have very well proved, that Sanchoniatho, though acquainted with the deluge, might have passed it over in silence, for very obvious reasons ^d. But how are so many other important omissions to be accounted for? such as, for example, the fall of the first man, the confusion of tongues, and the dispersion of mankind? I shall omit also the reflections which naturally arise from this circumstance, that the first men spoken of by Sanchoniatho have not the smallest resemblance to the real progenitors of the human race, Adam, Eve, Noah, Shem, Ham, and Japhet.

Therefore let them hunt after analogies between the Greek and Phœnician languages as long as they please, I shall always regard as lost labour, all that pains and study which several men of learning have been at to make the Phœnician historian's account of his personages agree with the scripture-history of the patriarchs. A few little touches, which, with much straining, may be applied to some circumstances or events of the lives of the patriarchs, are not sufficient to

^b The scriptures seem to hint this very plainly, Judg. c. 8. v. 27.

^c See *supra*, p. 377. & 378.

^d See *explicat. des fables*, par M. l'Abbé Bannier, t. I. p. 160. & 173.

establiſh ſuch an agreement. Accordingly we find, that there is no ſort of uniformity among the authors I am diſputing with, in their application of theſe facts. I repeat it; therefore, that if we judge of this matter impartially, and without prejudice, we ſhall ſee no reaſon to imagine that Sanchoniatho had any knowledge of the writings of Moſes. It is truth that ſpeaks, and diſplays itſelf every moment in the books of Moſes. The moſt abſurd tales and fables run through the whole work of Sanchoniatho. We perceive, it is true, in the writings of this author ſome veſtiges of the primitive tradition concerning the original ſtate of human nature; but this tradition appears there quite diſfigured as to the moſt important truths, and viſibly changed even in the moſt material circumſtances of the hiſtorical events which it relates.

DISSERTATION II.

Upon the authenticity and antiquity of the book of Job.

THE frequent use which I have made of the book of Job, for proving that certain arts and practices obtained in the remotest ages, obliges me to engage in an inquiry into the antiquity and authenticity of that work. There is not one of all the sacred books concerning which more difficulties have been raised, or more conjectures formed. Some pretend, that Job is only an imaginary person, and look upon his history as nothing but an apologue. Others admitting the reality of his existence, are not agreed either about his family, his country, or the age in which he lived. The critics are no less divided about the author who has transmitted that work to us. I shall not engage in all the researches which a rigorous discussion of the different opinions proposed by commentators would require. It will be sufficient, I think, briefly to touch upon the principal heads, and represent my own sentiments on these questions which have been so often debated.

It is without any foundation that certain critics have advanced, that Job was an imaginary person. His book is not an apologue, and still less a tragi-comedy. The prophet Ezekiel speaks of Job as one who had really existed^a. The sacred author, who has wrote the history of the two Tobits from the memoirs of the father and the son, proves clearly, by his panegyric upon Job, that he had been regarded by all antiquity as a real person, and his history as a true history^b. St James in his epistle speaks of him in the same manner^c.

Besides, the author of this work would certainly have saved himself the trouble of those circumstantial details which we

^a C. 14. v. 14.

^c Chap. 5. v. 11.

^b Tobit, c. 2. v. 12.

find in the preliminary history at the beginning of the book of Job, if he had designed only to compose an apologue. The author there specifies, with that precision which characterises real historical narrations, the number of Job's children, the kinds and quantity of his goods, the names and country of his friends; and though the greatest part of these names may have mystical significations, this does not hinder their being the true names of real persons, since it is the same with all Hebrew and Chaldean names. In a word, there is nothing in the narration of the book of Job which can authorise us to deny the reality of his history. I see no particular reasons to deny it; and we cannot do it without disregarding the testimony of Ezekiel, Tobit, and St James, who, as we have seen, speak of Job as a real and not an imaginary person. After these reflections, we have nothing to do, but inquire where, and at what time Job may have lived, and in what manner his work has been transmitted to us.

Job was of the land of Huz or Uz ^d, that is to say, of Idumea, the country where Esau, otherwise called *Edom*, fixed his habitation after the death of Isaac. Idumea had been originally inhabited by the Horites, a people who derived their name from one Hor or Hori, of whom the scripture makes mention ^e. This country was then named the land of Seir ^f. Uz, the country of Job, was a part of Idumea, as Jeremiah expressly tells us ^g. This district, or rather this province, was situated on the borders of Arabia the Desert. It was there that Job, after he had happily overcome all his trials, composed in verse, a narrative of this memorable event. It is even probable, that he put it in writing; for we see, by the manner in which he expresses himself, that the art of writing was known in his time ^h. Job embellished his narration with all the riches of poetry; and, according to the eastern manner, made use of many metaphors and other hyperbolical expressions.

As to the time in which he lived, several commentators

^d C. I. v. 1.

^e Gen. c. 36. v. 22. & 30.

^f Ibid.

^g Lament. c. 4. v. 21.

^h C. 19. v. 24. c. 31. v. 35. 36. c. 13. v. 26.

think,

think, that Job is the same with him who is spoke of in Genesis under the name of Jobabⁱ, who had for his mother Bozra, for his father Zara the son of Rahuel, the grandson of Esau^k. They say, that he was born the same year that Jacob went down into Egypt^l. This opinion is founded upon an addition which we read at the end of the Septuagint version and of the old Vulgate. All agree, that this addition is very ancient. Theodotion retains it in his translation. Aristæus, Philo, and several others acknowledged and made mention of it^m. Eusebius seems also to have adopted itⁿ.

Others make Job descend from Nahor the brother of Abraham^o. Some pretend, that he was the son of Esau^p; several even say, that he espoused Dinah the daughter of Jacob^q. Without staying to discuss all these opinions, which are subject to great difficulties, I imagine, that we have in the book of Job itself, more positive and satisfactory evidences of the time in which he lived.

It is said in the book of Job, that he survived his trials 140 years^r. The best critics think that God did not begin to try him till he was about the age of fifty, and consequently, that he lived 190 years^r. In fact, he could not be much less than fifty years of age at the beginning of his trials; since he was already the father of ten children, all by one woman, all grown up and even adult. Besides, what Job says of himself shews, that he was then a person of great power and credit, of approved and well-known prudence^t. Job must then have lived near 200 years, an age which brings us up near to the

ⁱ C. 36. v. 13. & 34.

^k This is the opinion of the most part of the Hebrew authors. The Greeks have embraced this opinion, and after them several modern authors.

^l See the Talmud, David Kimki, comment. on Job, and the authors quoted above, Rabbi Levi and others make Job to have lived even some time before this.

^m Origen *contra Cels.* l. 6. p. 305. Cantab. in 4^o. 1667.

ⁿ Præp. evang. lib. 7. cap. 8. p. 310. 311.

^o St Jerom, Rupert, Liranus, Bellarmin. &c.

^p Aristæus *apud* Euseb. præp. evang. l. 9. c. 25.

^q Chald. interpret.; Rupert. in Genes. l. 8. c. 10; Testat Genebrard, &c.

^r C. 42. v. 16.

^t See le P. Calmet, in Job, p. 454.

^u Calmet, *ubi supra*.

time of the ancient patriarchs. The other proofs which his own book furnishes us with, are no less conclusive.

We know that idolatry began by the worship of the heavenly bodies ¹. We see from the manner in which Job expresses himself, that this was the only kind of idolatry known in his time in the country where he lived ²: for it is to be presumed, that if there had been any other, he would equally have mentioned it. The book of Job then must have been composed before the time of the introduction of idol-worship, or at least before that practice had penetrated into Idumea. In the mean time the adoration of idols may be traced up to very high antiquity, since it prevailed in the time of Jacob in Mesopotamia ³, and probably in several other countries.

Another custom which characterises the remotest ages, is the exercise of the sacerdotal office by the heads of families. We see by the book of Job, that this holy man was the priest of his family; that it was ~~him~~^{he}, who, according to the universal practice of the first nations, purified his children, and made expiation for the sins which they might have committed ⁴. Even the kind of sacrifice mentioned in this book, is worthy of observation; there we hear of none but holocausts, and the best commentators think, that before the law there were no other sacrifices used. Peace-offerings and sin-offerings in the manner ordained by Moses, according to them were not known till under the law ⁵.

In the book of Job there is also frequent mention of apparitions of God. Elihu speaks of revelations and visions of the night as things then very common. We are not ignorant, that apparitions were never more common, than in the times of the patriarchs. God was then pleased very frequently to reveal himself to men.

Let us add, that Job's riches consisted only in cattle: we must even observe, that in the detail given of them in his book, there is no mention of mules or horses, a mark of the

¹ See l'explic. des fabl. de l'Abbé Bannier, t. I.

² C. 31. v. 26. 27.

³ Gen. c. 35. v. 4.

⁴ C. I. v. 5.

⁵ Calmet, in Job, p. 445.

most remote antiquity *. In a word, we see no notice taken of the miracles wrought by Moses, in Egypt or in the wilderness, though Job lived at no great distance from these countries ^b. He does not even allude to any other events mentioned in scripture, except to the deluge ^c, and the destruction of Sodom ^d. All these facts united, bear the impression and character of the highest antiquity. These evidences are positive, and so much the more positive as they are taken from the book itself, which we have still under our eye. Let us now endeavour to determine, as near as we can, the time when Job may have composed his work.

A circumstance particularized at the end of his book, inclines me to think, that he must have been cotemporary with Jacob. There we read, that his friends made him presents of gold rings and of *Kesitaths* ^e. Rings were worn in Abraham's time ^f; and they were a part of the female ornaments in the days of Jacob ^g. As to the *Kesitaths*, this kind of money does not seem to have been in use till after Abraham *. When this patriarch bought the field of Ephron, it is said, that he gave 400 pieces of silver for it; and we find, that the value of these pieces of silver was then determined by their weight ^h: but when Jacob bought a parcel of a field from the children of Hamor, it is said, that he gave for it 100 *Kesitaths* ⁱ. The scripture does not add, that this money was then weighed. It appears then, that the *Kesitaths* given to Job by his friends were not in use till after Abraham, and consequently Job must have lived after this patriarch. We have shewn above, that every thing in his writings denotes a very high antiquity, and that, excepting the deluge, and the destruction of Sodom, Job does not seem to have known any of the memorable events related by Moses. We believe,

* We find no mules among the Jews before David's time, and no horses before the reign of Solomon.

^b See *supra*, p. 386.

^c C. 22. v. 15. & seq.

^d C. 21. v. 21. c. 28. v. 5.

^e Job, c. 42. v. 11.

^f Chap. 24. v. 22.

^g Ibid. c. 35. v. 4.

* See what I have said of the *Kesitaths* in the article of commerce, chap. I, p. 283.

^h Gen. c. 23. v. 16.

ⁱ Ibid. c. 33. v. 19.

therefore,

therefore, that he must have lived near the times of Jacob, about 1730 years before J. C.

The manner, it is true, in which Job speaks of the Pleiades, might lead us to think, that he had lived sooner than we have placed him. We see, that, at the time when he wrote, the Pleiades foretold the return of the spring^{*}; and we know, that the ancients determined the seasons by the heliac rising and setting of certain constellations. The proper motion of the fixed stars is one degree of the sign in 72 years. Now supposing, for example, that the star named *Taigetta*, the most northern of the six stars which compose the Pleiades, was then precisely in the colure of the equinoxes; an astronomical calculation would fix the epocha of Job, at the year 2136 before the Christian æra, an epocha which is 406 years before that which I have assigned.

But it does not appear to me, that this observation ought in the least to unsettle that epocha for which I have determined. In fact, the star we speak of not having departed above six or seven degrees from the colure, during the 406 years which make the difference between the astronomical calculation and the epocha which I have fixed; its rising in that interval would be retarded only about six days. The Pleiades, therefore, of which this star makes a part, might still very well foretel the return of the spring in the year 1730 before J. C. which is near about the time in which I have thought proper to place Job.

Job, without doubt, had no design, in composing his work, to instruct us in the state of the heavenly bodies, and therefore would not study that precision which a didactic work would have required. A trifling difference therefore of a few days, in my opinion, merits no regard. In a word, all the conclusion that can be drawn from this astronomical calculation, in opposition to my sentiment, is, that Job was more ancient than I have made him. But the reasons which have determined me to make him cotemporary with Jacob,

^{*} See our dissertation on the constellations which are spoke of in the book of Job.

seem to outweigh all other considerations. Let us now examine, in what manner his work may have been handed down to us.

Opinions are divided about the author of the book of Job. Some ascribe it to Solomon, others to Isaiah: there are even some modern writers who think that we owe it to the prophet Ezekiel. All these different opinions resting only on the most slight and frivolous conjectures, it is unnecessary to spend any time in refuting them.

The book of Job, as we have it at present, appears to me to be in part an original work, and in part a translation. In fact, we must distinguish in this work, the historical narration from the speeches of Job; that is to say, his discourses and conversations either with God, or with his wife and friends. The historical part contains circumstances which Job certainly could not have mentioned: this, therefore, has been furnished by another hand. As to the conversations; this part is a translation into Hebrew from the Syro-chaldaic, which was probably the language used by Job¹.

The conformity of style which is remarked between the historical narration of Job, and that of the pentateuch, inclines me to think, that Moses is the author of that work as we have it at present. We know, that this legislator of the Hebrews was forced to fly from Egypt, for having slain an Egyptian who maltreated an Israelite^m. He fled into the land of Madianⁿ, where he resided several years, and where he even married. Moses, consequently, had an opportunity of learning the language of that country, which was the same, or at least very near to that where Job had lived^o. Thus Moses might become acquainted with the work which Job had composed, and even left in writing^p. It is very probable, that having thought proper to translate it for reasons unknown to us at present, he had a mind to make the author of it known; and therefore wrote his history, in which he has taken care to record the country of Job, the number of his children, the

¹ See *supra*, p. 386.

^o See *supra*, p. 386.

^m Exod. c. 2.

^p Ibid. id.

ⁿ Ibid.

greatness of his wealth, his constancy in his sufferings, his confidence in God, his happy deliverance from all his trials, the recompense which he received, and, in a word, the number of years which this holy man lived.

We have several of the most learned authors of antiquity for the patrons of our opinion. The Chaldee interpreters, Rupert, Tostat, Genebrard, &c. make Job to have lived in the patriarchal ages, and before Moses. Origen assures us, that this book is more ancient than the legislator of the Jews^q; the Syrians seem to be of the same sentiments, since they place it at the head of all the canonical books. The author of a commentary printed under the name of *Origen*, thinks, that Job first wrote his book in Syriac, and Moses translated it into Hebrew^r. Another commentary on the same book, quoted also under the name of *Origen*, says still more expressly that Moses is the author of it^s. This opinion has been, and still is the most generally followed^t.

I know very well, that some moderns have made great efforts to discover in the book of Job some places which, according to them, alluded to the passage of the Red sea, and to the law of Moses. But their conjectures are so forced and so unnatural, that this opinion falls to the ground of itself. The slightest knowledge of the Hebrew is sufficient to make any one sensible of its weakness, and how far these authors have departed from the meaning of the texts which they would use in support of their opinion.

I confess that we find in the book of Job some terms and some expressions which nearly resemble those of some sacred writers; but this does by no means prove, that Job had borrowed these expressions from their writings, and that this book had been composed later than the works of these authors. We might even draw a quite contrary conclusion from this conformity, that these writers had borrowed the expressions in

^q *Contra Cels.* l. 6. p. 305.

^r Origen in Job, p. 277.

^s Comment. in Job a Perionio, Latine edit. in prolog.

^t Calm. pref. in Job, p. 5.; Acad. des inscript. t. 4.; Journ. des scav. Nov. 1754, p. 730.

question from the book of Job : this consequence is, at least, as natural as the other.

But neither the one nor the other is necessary. Men have frequently the same thoughts, and often express them in the same manner without communication. We find every day the same turn of thought, and expressions nearly similar, in authors who never had the least intercourse, or any reciprocal communication of their works. David might have had the same ideas with Job, on certain subjects ; and as they both wrote in verse, it might very naturally happen, that both might use turns of expression nearly similar ; and yet we ought not to conclude from thence, that Job had taken these expressions from David, or that David had proposed to imitate Job.

But, it will be said, do we not meet with a hundred words in the book of Job which are not Hebrew, and which we know to be taken from the Syrian and Chaldean languages ; a mixture which renders the style of this book very different from that of the books of Moses ?

To this I answer, That as to the narration, or historical part of Job, which I ascribe to Moses, we do not find one word in it that is not pure Hebrew. The style of it is perfectly similar to that of the Pentateuch ; no body can maintain the contrary, without exposing himself to the charge of prevarication, or of ignorance in the Hebrew language.

As to the rest of the book of Job, such as we have it, Moses being only the translator, it is not at all surprising, that we find some words in it taken from the Syriac and Chaldee. The reason is obvious. The style of the book of Job is figurative, poetical, obscure, and sententious. It happened to Moses as it daily happens to all who translate works of a close and obscure style, whose language is bold, enigmatical, and full of metaphors. Not finding words in the language into which they translate these works, able to preserve the force and energy of the original expressions, they are very often forced to retain some words of the original, to form others from them, and even to borrow from other languages to supply the barrenness of that into which they render their authors : by this means they avoid having recourse to periphrases,

which make the discourse always languish, and unavoidably weaken the diction. Moses finding himself in these circumstances, in translating the book of Job, had a regard to the barrenness of the Hebrew tongue. He chose rather to retain the original terms, than to render them by others which would have impaired their sense and energy. Besides, the relation and affinity between the Hebrew and Chaldee languages is such, that words of the one or of the other language are often used indifferently.

I think, I have now set forth the chief objections which have been raised against the antiquity and authenticity of the book of Job. We see that it is not hard to answer them. But it is not so easy, as I imagine, to get over the characteristics of the greatest antiquity which appear in all parts of that work.

DISSER-

gree to this constellation. But we have still stronger reasons to confirm this interpretation.

Of all the constellations which seem not to set, the Great Bear is undoubtedly the most remarkable. It probably is the first which was taken notice of, and consequently the first also which received a particular name. I shall prove elsewhere, that, in all antiquity, and almost in all nations, that collection of stars has been designed by the name of an animal ^b. *Aisch* in Job is also an animal. "Canst thou," says God to Job, "feed *Aisch* with his sons ^c?" This expression represents to us the stars which compose the Great Bear, collected together in the heavens, like a flock which feeds in a meadow. Virgil says in the same strain: *Polus dum sidera pascet* ^d. We know, that the book of Job, excepting the historical part, is written in a style highly poetical. This way of speaking ought not therefore to surprise us. Let us remark further, *Aisch* in Job is feminine. *Ἀστὴρ*, in like manner, is feminine in Homer. *Aisch* is the first star named in Job. The Great Bear is also the first constellation mentioned by Homer in his description of the shield of Achilles.

This is also the interpretation of the most approved commentators. The author of the Hebrew concordance by *Aisch* understands the Great Bear. "It is also," adds he, "the name of a certain wild beast." Further, this word in the Ethiopic tongue, signifies a certain fish, which they call the *Sea-bear* ^e. Aben-Ezra, in his commentary on Job, says likewise, "That *Aisch* or *Aisch* is a northern constellation, composed of seven stars." In another place, he expresses himself in this manner: "The constellations of the north are twenty-one in number. One of them is *Aisch*, and its stars to the number of seven; and the second, &c. ^f;" and some pages after in the same work, he says, "that the stars of the Great Bear are *Aisch* and his sons." Schindeler,

^b See the dissertation on the names and figures of the constellations at the end of the 2d volume.

^c Cap. 33. v. 32.

^d *Æneid*. l. i. v. 611.

^e See concord. Heb. par Buxtorf, imprimée à Bale.

^f *Liber astrolog. nom. Ruchit Hochma*,

and after him, Leigh, in their dictionaries, have interpreted *Aisch* in the same manner. "*Aisch* or *Asch*," say these authors, " signifies an assemblage of stars. This word represents a " northern constellation, named the *Great Bear*, composed of " seven stars. This is," add they, " the opinion of almost " all the commentators."

The author of the Greek version of the book of Job has translated the word *Aisch*, in the first place of the text where he found it, by the *Pleiades*, Πλειάδα, and in the second by Εσπερον, the *Evening-star*. This variation alone is sufficient to shew, that the authority of this interpreter is not to be laid in the balance with that of the authors which I have just now quoted. Besides, it is well known, that we ought not to pay any great regard to the Greek version of the book of Job. It was not done by the Seventy, who translated only the Pentateuch, as it is easy to prove by the authority of Josephus and Philo, and by several reasons taken from a comparison of the Greek versions of the different books of the Old Testament.

The author of the Vulgate is not more uniform in his version than the Greek translator. In the first place of Job, he translates *Aisch* by *Arcturum*, a star in Bootes; and in the second by *Vesperum*, the *Evening-star*.

The word כִּימָה *Kimah* comes next. We see clearly, that in the different passages where this word is used^a, it must be understood of some constellation remarkable for its relation to an agreeable season. God says to Job, " Canst thou bind " the sweet influences of *Kimah*?" that is to say, " Canst thou " bind up or stop the fertility of the earth, or prevent its pro- " ducing flowers and fruits, when *Kimah* appears?" It is evident from this text, that by *Kimah* Job meant the constellation which in his time introduced the spring.

The different significations of the root of this word, both in the Hebrew and Arabic, concur also in pointing out the same thing. *Kimah* comes from כָּמָה, *Kamah*, which in Hebrew

^a Lexicon pentaglotton, on the word *Aisch*.

^b Cap. 9. v. 9. c. 38. v. 31.

signifies to *desire*, to *rejoice*. Of all the seasons, it is the spring which is undoubtedly the most desired, and which is also productive of the greatest joy and pleasure. If we derive the word *Kimah* from the Arabic root *Kaouam* or *Kam*, this characterizes the spring, at least, as distinctly. *Kam* in Arabic signifies *subigere mulierem*, and to *become warm*. Now, we know, that the earth at the approach of spring begins to become warm, and to open its bosom. This is also the time when the females of most kind of animals become pregnant. It remains only to know, what was the constellation which in Job's time introduced the spring. Every thing leads us to think that it was the Pleiades.

Besides the two significations of the Arabic root *Kam*, which we have just now mentioned, it serves likewise to signify a *troop*, a *number*, a *multitude*. This signification agrees perfectly well to the *Pleiades*, with respect to the number of stars included in that constellation. Accordingly this is the meaning of the name given to this collection of stars in several languages. Πλειάδες in Greek signifies *multitude*, as does *Kimah* in Hebrew, and *Kaouam* in Arabic.

In fine, we see that the best versions of the holy scriptures by *Kimah* understand the Pleiades. Symmachus and Theodotion have thus translated it. The Talmudists say also that *Kimah* signifies a *multitude*, a *number of stars*. It is asked in the Talmud, what is כִּמָּה *Kimah*? Rabbi Samuel answers: "This word signifies, as it were an hundred stars;" that is to say, *Kimah* is a constellation which includes a number of stars. Rabbi Jonas says likewise, that *Kimah* is the same constellation which the Arabians call *Al-Thuraiya*. We know that *Al-Thuraiya* is the name which this people have given to the *Pleiades*. It is true, that Aben-Ezra by *Kimah* understands the *Hyades*: but this difference is not considerable, since both the *Pleiades* and the *Hyades* are included in the constellation of the Bull, and are very near each other.

Even astronomy favours the opinion which we propose. Calculation shews us, that the cosmical rising of the Pleiades

about 3500 years ago announced the return of spring. I have proved in my inquiry into the antiquity of Job, that this epocha agrees perfectly well with the time when, from the circumstances mentioned in his book, he appears to have lived.

The author of the Greek version has translated *Kimah* in the first place by *Arcturus* ^k, in the second by *Pleiades* ^l. But in Amos ^m, where this word is also found, the Greek interpreter, either by design or otherwise, has omitted to translate that part of the Hebrew text.

The author of the Vulgate has translated *Kimah* three different ways in the three places where it is found. In the first, he renders it by *Hyades* ⁿ, in the second by *Pleiades* ^o, and in the third by *Arcturus* ^p. Yet still in the midst of all this uncertainty, we see, that both the author of the Greek version, and the author of the Vulgate, have admitted, that the Hebrew word *Kimah* may mean the *Pleiades*.

The third constellation named in Job, is כסיל, *Kesil* ^q. The root of this word is *Kasal* כסל, which in Hebrew signifies to be *inconstant*, *changeable*; in Arabic, to be *benumbed*, to be *idle*, to be *cold*.

There is reason to believe, that by *Kesil* Job means the Scorpion. It is sufficient to convince us of this, to examine the manner in which he expresses himself. God says to Job, “Canst thou loose the bands of *Kesil*?” that is to say, “Canst thou loose and open the earth, which is shut up and benumbed when *Kesil* appears? Canst thou make it then produce flowers and fruits?” Let us add to this what God says of *Kimah*, and we shall see by the characters which distinguish these two stars, that they are two constellations of the zodiac, but two constellations which point out two very opposite seasons.

In fact, God says to Job, “Canst thou bind the sweet influences of *Kimah* ^r?” that is to say, “Canst thou bind or

^k Chap. 9. v. 9.

^l Chap. 38. v. 31.

^m Chap. 5. v. 8.

ⁿ Job, c. 9. v. 9.

^o Ibid. c. 38. v. 31.

^p Amos, c. 5. v. 8.

^q Chap. 9. v. 9. c. 38. v. 32.

^r Chap. 38. v. 31.

“stop the fertility of the earth at the rising of *Kimah*? Canst thou prevent its then producing flowers and fruits?” But in speaking of *Kesil*, God says on the contrary, “Canst thou loose the bands or cords of *Kesil*?” that is, “Canst thou loose and open the bosom of the earth, which begins to be benumbed when *Kesil* appears?” It is very clear, that in this passage Job intends a constellation opposite to *Kimah*. We have just now shown, that by *Kimah* Job designed the *Pleiades*. There is, therefore, no doubt but by *Kesil* he designed the Scorpion, a constellation opposed to *Pleiades* by almost one half of heaven, and which then announced the approach of winter.

We find that Aben-Ezra understood by *Kesil*, that star of the first magnitude known by the name of the *Scorpion's heart*, or of *Antares*. In his commentary on Job, he explains himself thus: *The sweet influences of Kimah, &c.* “*Kimah*, this,” says he, “is the northern stars, and *Kesil* is a southern star. “*Kimah* produces fruits which are the delight of man, and “*Kesil* does the contrary. *Kimah* is a great star, called the “*Bull's Eye*,” that is to say, *Hyades*; “and *Kesil* is a great “star, called the *Scorpion's Heart*,” that is to say, *Antares*. The interpretation of Aben-Ezra, which is the same with ours, agrees also very well with the root of the word *Kesil*, which in Arabic signifies to be cold, to be idle, to be benumbed, and in Hebrew, to be inconstant, to be changeable, as the season is at the beginning of winter.

Rabbi Levi Ben-Gerson says also, that *Kesil* is one of the southern constellations: that when the sun enters into the sign where this star is found, the trees can no longer bring forth fruit, on account of the cold which this star brings with it.”

Lastly, there remains the plural word מורות *Mazzaroth*, of whom Job says, that they appear each of them in his sea-

^r Cap. 38. v. 31.

^t Cap. 38. v. 31. & 32.

^u Comment. sur Job, c. 38. v. 31.

It is probably from this root that the name of the month *Kislev* is derived, which answers to our November. This month, it is likely, was named *Kislev* by the Jews from this star, *Kesil*, which forms the Scorpion's heart.

son *. Several commentators understand by this word, the signs of the zodiac. This is the opinion of Pagnin, of Schindeler, of the author of the last English version, and of the French translation of the Bible, printed at Cologne in 1739. The Talmudists and Rabbi Solomon Ifaki have explained it in the same manner †.

This opinion seems even to be supported by the words of the original text. In fact, God says to Job, “ Canst thou bind the sweet influences of *Kimah*, or loose the bands of *Kesil*? Canst thou bring forth *Mazzaroth* (each) in his season? ” These last words, *Canst thou bring forth Mazzaroth each in his season?* placed immediately after the *Pleiades* and the *Scorpion*, seem to fix the signification of this word *Mazzaroth*. It can mean nothing but the signs of the zodiac which appear above the horizon successively. This explication is so much the more probable, that Job introduces *Mazzaroth* in the same breath, and immediately after he had spoken of two different seasons, announced by two different signs of the zodiac.

The signification of the root of this word *Mazzaroth*, is no less favourable to the explication which we propose. *Mazzaroth* comes from the Hebrew נָזַר *Nazar*, cinxit, incircled. No denomination can agree better to the signs of the zodiac, which form, as it were, a girdle, with which the earth is incircled. This is even the name by which this circle of the sphere was originally designed ‡.

With respect to the secret chambers of חֲדָרֵי תִּמָּן *Theman*, that is to say, of the south, which are spoken of in the same passage §, it is highly probably that Job thereby intended the southern constellations, which are secreted from our hemisphere. This is the opinion of Aben-Ezra ¶. “ The

* Chap. 38. v. 32.

† See also Suid. voce *Μαζαρωθ*, t. 2. p. 481.

‡ Chap. 38. v. 31. & 32.

§ See the dissertation upon the names and the figures of the constellations at the end of the second volume.

¶ Cap. 9. v. 9.

Comment. on Job, c. 9. v. 9.

“ secret chambers of *Theman*,” says this author, “ are the
 “ southern stars ; and as these stars do not appear at all, or
 “ but for a short time to our hemisphere, Job calls them the
 “ secret chambers of the south, as if these stars were in a se-
 “ cret or concealed place *.”

* It is to M. l'Abbé l'Avocat librarian to the Sorbonne, and to M. Bernard the king's interpreter for the Hebrew, Syriac, and Chaldee, that I am indebted for the lights furnished me by the oriental languages, for determining the signification of the constellations spoken of in the book of Job. I acknowledge further, that it is to these gentlemen I am obliged for every thing which I advance in this work, from the etymology and propriety of the Hebrew terms, or of the other oriental languages. They have had the goodness to assist me in this part of my labour.



The End of the FIRST VOLUME.

